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Laundering Rubber Druggists' Sundries

Modern Machine Methods for Cleaning Pure Gum, Molded, and Hand-Made Articles

THE practice of offering to the public clean and attractively finished goods is growing among manufacturers of druggists' sundries and other items of rubber goods for individual use. The net results enhance the appearance, keep the quality of the goods, and promote their salability.

Turning out attractively finished rubber goods has not always been a strong point in rubber factories although traditionally observed for certain products

In the manufacture of rubber boots and shoes the cured goods receive a bright or dull finish, the first, by hand brushing or a dip application of a special linseed oil varnish thinned with naphtha; the second, by sponging with a blue-black dye solution. The goods are cleaned, virtually washed, in the finishing medium in both these instances. In proofed goods clean and good-looking surfaces are obtained by application of dusting materials. The method serves in effect as a sort of dry cleaning process.

Seamless Rubber Co.

Laundered Rubber Goods Protected by Cellophane

Washing Rubber Goods

Cleaning druggists' sundries by washing with detergents and water has for years been practiced in finishing special goods to remove sulphur bloom. The methods and machinery were poorly devised for the purpose and in consequence they were inefficient. Machine laundering originally developed for the displacement of domestic hand laundry work has grown into an industrial method applied to cleansing not only fabrics but other materials and products in process of manufacturing or finishing.

In the rubber industry the advantages of steam laundering are being especially appreciated by manufacturers of druggists' sundries, as for example: nipples for infants, teething rings and pads, milk bottle caps, bulbs for pipettes, atomizers, and cameras, finger cots, tubing, bathing caps, water bottles, syringe bags, and various other articles both molded and hand made. Laundering such rubber articles is done as a final finishing operation or immediately prior thereto by removing from the surfaces of the goods, soap or other film adhering to the molded article.

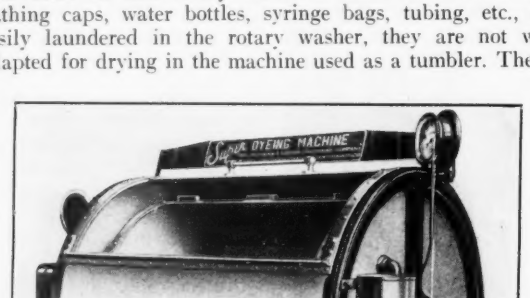
All pure gum articles to be bright finished with a wash coat of shellac or other preparation require to be thoroughly laundered to present a perfectly clean surface. Every trace of soapstone and stain should be removed in order that the full color effect of the goods may appear to best advantage under the transparent varnish coating.

Laundering rubber goods that are used for feeding infants, and the subsequent protection of these products in germ proof individual containers, has become a requisite in merchandising. Mothers have been so generally and thoroughly instructed by health authorities, physicians, and nurses in the importance of protecting the health of infants against the attacks of germs that they very frequently refuse to accept such articles unless protected by a sanitary wrapping that clearly shows a clean article enclosed.

Rubber Laundry Machines

Machines for laundering rubber goods are limited to the rotary washing and hydro-extraction units shown in the accompanying illustrations. The cylinder of the rotary washer is constructed entirely of metal and revolves in a wooden shell mounted on a frame standing sufficiently high from the floor to permit clearance for the discharge outlet. The washing cylinder is direct geared and motor driven. In connection with this drive is a mechanism which periodically reverses the direction of rotation of the washing cylinder. Access is had to the interior of the washing cylinder for loading and unloading through a slidable door of sheet metal. Hot or cold water can be delivered to the machine by suitable piping. The washing cylinder is of perforated monel metal and is subdivided circumferentially into a set of six pockets or sections for faster washing and better distribution of the goods in the cylinder. In the bottom of the outer case is located the discharge outlet and a system of steam pipes which provide heat for boiling the cleansing chemical solution and rinsing water. When the machine is drained, the steam pipes are utilized to heat the drum for drying such small articles as nipples.

Items of any sort or description can thus be both laundered and dried in this rotary washer. While such articles as bathing caps, water bottles, syringe bags, tubing, etc., are easily laundered in the rotary washer, they are not well adapted for drying in the machine used as a tumbler. Therefore, goods of this sort are removed after washing and supported on racks for air drying.



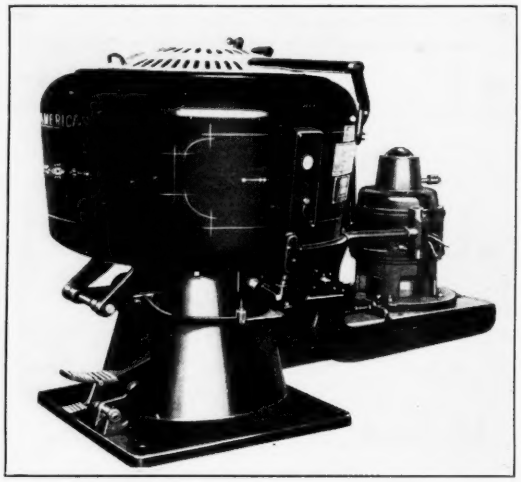
American Laundry Machinery Co.

Cascade Type Rotary Washer

Hydro-Extractor

Another laundry machinery item utilized for rubber work is the hyrdo-extractor. This, as shown in the illustration, is a vertical motor driven centrifugal provided with a cover to safeguard the operator. In this machine large flat articles are transferred from the rotary washer and practically freed of adhering water without entangling them with one other or marking them with creases and wrinkles. The drying of such articles is completed by laying them out on racks.

Hydro-extractors are also used in the case of toy balloons. After the dyeing process in a dyeing machine, the balloons are placed in a hydro-extractor by which the surplus moisture is removed in 10 or 15 minutes. They are then placed in a rotary drying tumbler, through which heated air is passed. In this way the balloons are colored and dried within a very short time.



American Laundry Machinery Co.

Self-Contained Hydro-Extractor

Both these machines are adapted for other rubber factory laundering, as for example to wash liners, straight and cross hose wrappers, and wiping rags.

Doubtless other applications of these laundry machines may be suggested by this article to rubber production engineers, who must consider means for making their products more appealing to consumers. In this connection the exhibit of laundered and shellac finished goods, pictured herewith, shows how attractive an appearance can be given to nicely laundered fine rubber goods enhanced by boxing them under a transparent film of cellophane.

Bonding Rubber to Metal

UNDER the title "Closures for Receptacles" a patent has been issued[1] for a cement that is peculiarly tenacious for bonding metallic to nonmetallic materials. The main object of the invention is to provide a closure for receptacles, such as bottle-cap closures, in which the cementing material consists of a heat-coagulable substance in the form of rubber latex, with which may be mixed egg or blood albumen or other materials generally used as glue or cements.

The ingredients of the cement are combined as follows: 8 pounds of albumen are dissolved or swelled in 15 pounds of water and to the resultant material are added 2 pounds of rubber latex. Formaldehyde and its derivatives help considerably in securing a stronger cement. This mixture is thoroughly stirred to produce a homogeneous product. In use this cementing material is applied to the metal and the material it is desired to unite with it, such as cork, paper, etc. By the application of heat sufficient to coagulate the albuminous material, the cement can be hardened to effect a secure bond between the metallic and nonmetallic surfaces.

[1] Michael Levin, U. S. Patent No. 1,740,184.

Rubber Age Resisters[1]

Chemical Prevention Against Deterioration by Oxygen, Sunlight, Ozone, Heat, and Reversion of Cure in Storage and Service

WEBSTER NORRIS[2]

ALL of the antioxidants employed in the industry are harmless as handled in usual weighing and milling practice. They are all of light specific gravity. In the case of those in the form of dry powders care should be taken to prevent inhaling the dust on the part of those mixing stocks on open mills. In the case of liquid, waxy and low melting point antioxidants no special precautions are necessary for safe handling.

Albasan

Albasan is an antioxidant designed for light, bright colored and blooming goods. In most cases it is practically without effect on the color of goods either during the cure or upon exposure of the goods to the sun after the cure. Albasan resembles stearic acid in that it slightly softens rubber at the milling temperature and slightly hardens it when cold. It thus facilitates milling, calendering, and tubing.

It is estimated that one per cent of Albasan equals 0.15 per cent of D O T G in accelerating effect. It seems to activate greatly such accelerators as Tuads, Monex, Thionex, Safex, and Captax. Stocks containing Albasan have shown resistance to light checking particularly when they were exposed to light under no strain.

Antox

The name Antox was given first to a butraldehyde reaction product with aniline. As that material has been superseded, the name Antox now applies to the antioxidant formerly known as Grasselerager A. This is an amber colored nonvolatile liquid with no unpleasant odor, 1.01 sp. gr., and weighing 8.2 pounds per gallon. Being soluble in rubber, it is easily and rapidly incorporated in the batch upon which it exerts only a slight softening effect.

Antox has practically no effect on colors and will not bloom on unvulcanized rubber. It has distinct accelerating power, its activity being approximately one part equal to 0.4 part of D P G. Therefore, in moderately accelerated stocks it may be necessary to make allowance for this accelerating value. For some purposes sufficient acceleration is obtained from Grasselerager A alone.

The antiaging value of Antox is strikingly shown by a 16-day oven test at 70° C. on a rubber-sulphur-zinc-oxide test stock containing one per cent each of D P G and Antox as accelerator and antioxidant, respectively. The latter efficiently prevents the deterioration of rubber by oxygen, but it is not claimed unqualifiedly to be a preventative of sun cracking.

B L E

The recently announced antioxidant B L E is an amine-type-reaction product. It is a liquid of 1.087 sp. gr., insoluble in water and soluble in common organic solvents. Laboratory and manufacturing tests show it to be of outstanding value as an antioxidant adaptable to general purposes. Being a free flowing liquid, the material disperses in rubber quickly and freely. It gives excellent results in both compounded and gum type stocks. It is not suitable, however, for use in white goods or those of delicate colors because of the darkening effect it exerts on such colors in sunlight.

Stocks containing B L E offer very good resistance to deterioration in air at 158° F., and the resistance to aging at 212° F. is even more remarkable. In all oxygen aging tests this antioxidant gives consistently high class results and the same is true in regard to flex-cracking and increasing resistance to wear of stocks subjected to abrasion in service. It does not give trouble in factory operations, for it does not stiffen or dry the uncured stock but softens it slightly so that tubing and calendering are rendered easier. As much as 3 per cent can be used in automobile inner tube stock without handling troubles. As this material is soluble in rubber, it does not bloom out upon the surface.

Neozone Group

The Neozone antioxidants, with Antox and Parazone, form a notable group of rubber age resisters. The function of each is distinct and different. Thus, selection of any one among them is determined by its ability to protect the rubber hydrocarbon from the special deteriorating influences which the finished goods will encounter in service or storage, whether these be oxidation, tension breaks, reversion of cure, or sun-checking. Since Antox has been described, the characteristics of the group will be given.

Neozone Standard is a combination of three components. One of these is phenyl-alpha-naphthylamine, the primary function of which is to inhibit the oxidation of rubber. The second component is meta-toluylene-diamine, a polymerizing agent that functions as an antisoftener. It counteracts the depolymerization by heat that softens rubber products which are subjected in service to high temperatures or severe mechanical stresses. It also functions as an antioxidant although much less effectively than the first mentioned component. Because of the presence of the polymerizing agent, Neozone Standard inhibits the softening of pneumatic tire treads in service and diminishes the tendency of rubber compounds to undergo reversion on overcuring. The third component in Neozone Standard is stearic acid, which is an aid to dispersion and curing effect.

Neozone A. This is straight phenyl-alpha-naphthylamine, the antioxidant component of Neozone Standard. Thus the material exerts no inhibitive effect against deterioration from causes other than oxygen.

Neozone C. This member of the Neozone group closely resembles Neozone Standard in its make-up but contains less antisoftener, that is to say, meta-toluylene diamine.

[1] Continued from INDIA RUBBER WORLD, March 1, 1930, p. 55.

[2] Copyright by Webster Norris, April 1, 1930.

Neozone D consists of the straight antisoftener, phenyl-beta-naphthylamine. It is without antioxidant effect and intended for preserving those goods that in service would otherwise break down by the depolymerizing effect of exposure to high temperatures such as may be developed in tires, belt frictions, inner tubes, etc.

Oxynone

Oxynone is claimed as both antioxidant and accelerator. It is a crystalline chemical compound of the aromatic diamine type. Its accelerating power is quite mild in pure gum but very pronounced in tire tread stocks as it is entirely unaffected by carbon black. Development of its accelerating effect requires full curing temperatures similar to D P G, D O T G, and Hexa. In a quality tread its accelerating power is equal to that of D O T G, and in mechanical goods stocks it is superior to D P G. Its curing range is long, and the modulus of stocks containing it increases on prolonged cure and on aging. In white and light colored stocks, Oxynone exerts a more or less darkening effect; hence its usefulness is confined to tire stocks, mechanicals, and stocks for general purposes where color is not a special factor.

Parazone

Parazone is a non-discoloring antioxidant, the composition of which has not been disclosed. It is one of a very small number of commercial products that act effectively to preserve rubber goods against oxidation without at the same time seriously darkening their appearance if in white or bright colored tints.

R. & H. 50

R. & H. 50, an aldehyde amine product in the form of powdered resin, is classed primarily as an accelerator of medium activity. However, it has been demonstrated in practice to possess such distinct antioxidant value that it may also be included as a rubber preservative. Testing in a pure gum stock at 60° C. for two weeks in an oxygen bomb demonstrated its exceptional antioxidant value. Technical efficiency and economy are thus served in cases when the accelerator and antioxidant are one and the same material functioning in a dual role.

R. & H. 50 admits of use in conjunction with other more rapid accelerators such as the various thiurams, thiazoles, and guanadines. When so used, the amount of the rapid material can be reduced considerably with satisfactory results.

Resistox

Resistox, a pinkish-yellow waxlike antioxidant, is easily incorporated in all varieties of rubber stocks. It is practically inert during the cure, and likewise the cured stock shows this inertness by no great change in physical properties. Its accelerating effect is about equal to that of formaldehyde aniline. Due to its color, Resistox can be used in light and bright colored stocks. When such stocks are exposed to sunlight, those containing Resistox in considerable amount show a yellow discoloration. In normal usage this is not apparent.

Stabilite

Stabilite is a pure organic chemical compound in powder form. It not only prevents oxidation but also retards sun-checking of rubber goods. Its value as a softener is evident in free dispersion of carbon black and in the improvement it effects in tubing stocks. The variability of carbon blacks in their absorptive tendency toward organic accelerators is counteracted by the use of Stabilite with conservation of accelerator and the maintenance of its full effect.

Stabilite Alba

Stabilite Alba is a non-staining antioxidant especially suited for use in light and bright colored rubber stocks. Its preservative power is comparable to that exhibited by the most efficient antioxidants in general use for dark colored stocks. The well-known poor aging of rubber caused by impurities of copper in either rubber or pigments can be counteracted by the use of this antiager, as shown by an oven aging test of 24 days at 150° F. and a bomb test of 48 hours at 60° C. and 300 pounds' pressure of oxygen.

Sun-Cracking

The well-known destructive effect of strong sunlight on rubber is attributed to the oxidizing effect of ultra-violet rays and ozone. Under their influence, which is more rapid if the rubber is stretched, the material loses its elasticity, becoming brittle on the surface and developing cracks, which gradually penetrate deeply into the rubber and destroy its usefulness. Most antioxidants afford little or no protective influence against this form of deterioration. Only one, Parazone, is particularly effective against deterioration by sun-cracking.

Paraffin wax is commonly used to diminish this destructive effect of sunlight. If a good grade is used in amounts of 5 per cent on the rubber hydrocarbon, it is very effective. Because this material so readily migrates to the surface of both uncured and cured stock, its availability for the prevention of sun-cracking is very limited. There is, however, a certain organic material known as Sunproof, which is distinctly not an antioxidant, that effectually protects rubber goods from damage by sun-cracking

Sunproof

Sunproof is an organic product, inert chemically, and non-toxic. Its characteristics are summarized as follows: Color, pale lemon; form, granulated; melting point, 68°-78° C.; specific gravity, 0.95; odorless; no effect on rate of cure; no effect on color of goods during or after cure; very little effect on plasticity of uncured stock; no bad effect on aging; three to five times as effective as the best grade of paraffin wax.

It has been found that an oxidized surface can serve effectively as a means for controlling sun-cracking of rubber. One way of doing this consists in washing the vulcanized surface with an alcoholic solution of a copper salt, such as cupric chloride, which catalyzes oxidation of the surface. The protecting surface develops in a few hours and the rubber underneath is not affected.[3]

V G B

V G B was the first antioxidant introduced for general use. It is a reaction product of acetaldehyde and aniline. Its specific gravity is about 1.15, and melting point between 60°-80° C. Thus it disperses properly in rubber at mixing temperatures. In order to facilitate handling and insure cleanliness V G B is pulverized and screened. Its good effect is primarily on the rubber carbon; therefore it is applicable to pure gum, heavily loaded, and reclaim stocks. The protection given against deterioration is proportional to the amount used; consequently the percentages employed depend upon the goods and the service to which they are subjected.

[3] Ira Williams, "Oxidation of Rubber Exposed to Light." A paper presented before the joint meeting of the Division of Rubber Chemistry and the Akron Section of the American Chemical Society, Feb. 22 and 23, 1926.

Lindbergh's Rubberized Suit

"Lone Eagle" Gets Novel Type of Apparel for Long Journeys at Extreme Altitudes—More Comfort and Less Weight Salient Advantages

COL. CHARLES A. LINDBERGH, after getting a special plane to use in an extensive study of flying conditions in the stratosphere or upper reaches of the atmosphere, has had suits specially made for himself and Mrs. Lindbergh that it is believed will serve some exacting requirements in comfort and service. The new suits embody very unique features, not the least being a surface material of rubber sheeted between plies of khaki cloth.

The garments will be electrically warmed with a new type of heating element and allow much freedom in movement on account of the lighter weight and flexibility of the suit materials. The suits will be given the extreme tests directly after the colonel has finished the glider experiments that he has been conducting on the west coast.

Dr. B. R. Charles in the Rubberized Electrically Heated Aviation Garment Which He Invented

Heated Clothing Necessary

Aviation experts say that in the near future the speedways of the skies will be in the unexplored air levels of from 30,000 to 45,000 feet, in which lofty strata it will even be possibe to journey from New York to San Francisco in eight hours. At such altitudes, it is said, there are no fogs or storms, and, with winds practically constant, a flyer can truly go the limit. Of course, even in summer, it is very cold up there, but aeronautical engineers say that fast, safe, and comfortable flying is entirely feasible with planes and equipment adapted to cope with rarified air and very low temperatures. Some of the necessities are airtight cabins, superchargers to supply air to passengers and engine carburetors at sea-level pressure, and well insulated heated clothing. As several of the mechanical essentials for such flights already have been provided, inventors set about to devise apparel that would meet the very exacting needs.

Reducing Weight—Increasing Warmth

Colonel Lindbergh's suit will weigh 11 pounds, or some 5 pounds less than the standard fur-lined aviation garment designed for highest flying; and Mrs. Lindbergh's suit will weigh 8 pounds, or about 4 pounds lighter than the usual small fur-lined suit. Not only will the new suits be softer and light, but it is said that they will be much warmer than other electrically heated types because of several new features. Substituted for the customary calfskin outer shell will be the double or two-faced khaki with its inter-lamination of fine quality rubber sheeting. This rubber-calendered product is preferred to leather as it will shed rain, hail, and sleet quickly, as it allows much less body or artificial heat to pass to the outer air, and will not crack so easily at extreme temperatures. It is stated that tests of the rubber-interlined material show no perceptible changes at even 60° F. below zero.

New Type of Heating Element

Under the shell is a layer of fine Australian virgin wool, while the inside of the suit is formed with a novel heating element consisting of several thousand feet of fine resistance wire wound spirally about seine cord so as to give maximum flexibility and lessen likelihood of damage or short circuiting. The wiring is stitched to a fine reenforcing fabric and is faced with stout satin. Current is had by plugging in on the storage battery line, and master thermostats in the suit lining can be set to give any endurable temperature.

Paper Cement in Glass Containers

Rubber cement is now available in a glass jar with a sliding brush. Many advantages are claimed for this new type of equipment. Since the user can readily see how much cement is in the container, the brush can be adjusted so that it always is immersed in the cement, thus keeping its hair soft and preventing clogging on the handle and at the top of the bottle. Loss from evaporation and waste is materially decreased.

Rubber Belting

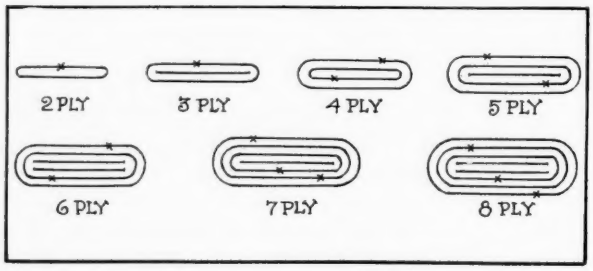
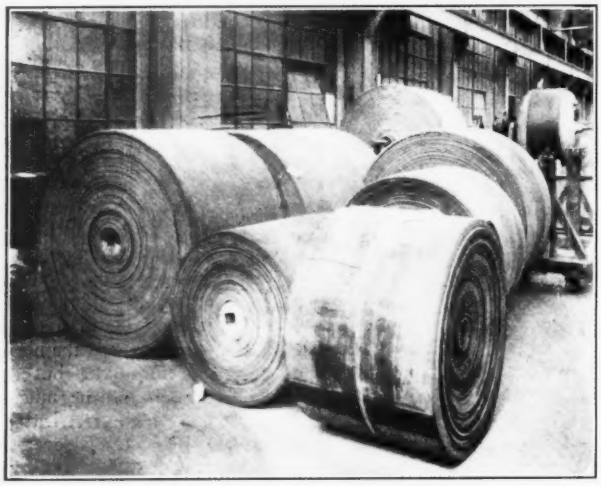


Diagram of Rubber Belt Plies

Modern Methods of Construction and Manufacture—A Belting Department Planned for Efficiency and Quality Production



Rolls of Conveyer Belting

THE mechanical goods division of the rubber industry ranks third in consumption of crude rubber, being surpassed in that particular by the tire and tube and the footwear divisions. Its industrial importance also is beyond estimate. The leading items of mechanical rubber goods tonnage are belting, hose for all purposes, steam packings, brake linings, etc. In recent years these products have been greatly improved in details of construction and the quality of component materials.

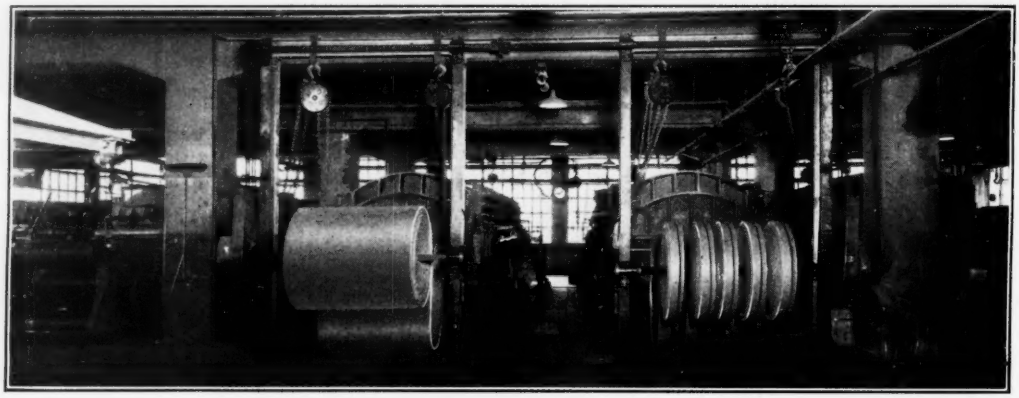
According to function, belting is of two classes: power transmission and conveyer. Both these types have been developed as engineering specialties to meet modern industrial service conditions. Belting construction is less complicated than that of hose and packings because its applications are limited essentially to power transmission and conveying materials. However, for these two purposes modern belting specifications, construction, and testing require the concentrated attention of chemists, rubber and textile technologists, and engineers. Hence the manufacture of rubber belting means much more than laying up frictioned duck strips and curing them as a unit with a rubber cover. It involves standardization of fabrics, rubber and fabric construction, and tests regulated by specifications in all essential particulars.

Materials and Tests

The schedule of belting ducks covers a range of regular construction in weights from 28 to 35 ounces per 42 inches width; for extra severe belting service 33- and 35-ounce weights are used. All fabrics are closely specified as to construction and tensile strength. The latter is determined on a standard duck testing machine and the results corrected for moisture at 70 per cent relative humidity at 65° F.

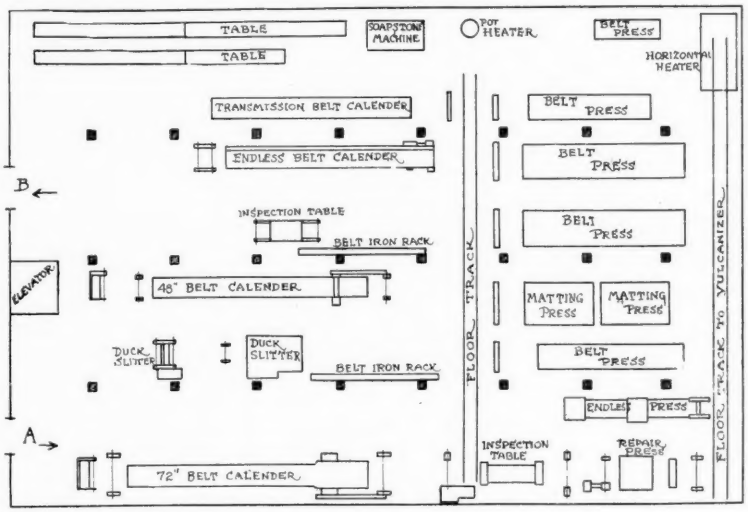
Rubber mixings are devised for tensile and curing effect and adhesion between the duck plies. Adhesion ability or "friction pull" was formerly considered a very important indication of the service value of a belt. Ability to withstand flexing has been proved a much more practical indication of the durability to be expected from a belt in service. The flexing test is applied by the machine developed for this purpose in the laboratories of the U. S. Rubber Co.

Preferred duck combinations for transmission belting are



A Group of Belt Presses

made according to the construction diagram of belt plies that may be seen on the preceding page. Thus two-ply belts consist of a single cover strip folded upon itself. Belts with plies exceeding two in number are laid up with laminated center plies wrapped with the proper number of enveloping cover plies to make the desired total number. The plies of a conveyer belt are all laminated except the outside envelop plies. An early improvement in transmission belting construction was effected by omitting the exterior rubber cover and curing the belting with a "friction surface." This



A Modern Belt Room Layout

method is still very much in favor and generally preferred to the rubber covering.

Power belting is subjected in service to rapid flexings over pulleys. This condition develops sufficient rise in temperature to cause separation of the duck plies by destruction of the adhesive power of the rubber. In this state the belt is worthless, unrepairable, and must be replaced. The severity of the flexing action in service is increased in the wrapped plies by reason of their fold over the edges of the laminated plies within. This local effect is eliminated by the expedient of making all plies laminated, thus allowing each ply to act independently of the rest in flexing around a pulley. Full laminated ply construction is a major improvement in power transmission belting and is applicable both to open end belts and to endless belts as well.

Making Transmission Belts

The process of belt making begins with frictioning the duck on both sides and, when specified, calendering a skim coating of a given thickness over the friction on one side of the duck. This skim forms a cushioning layer between the duck plies, and improves the flexing quality of the belt.

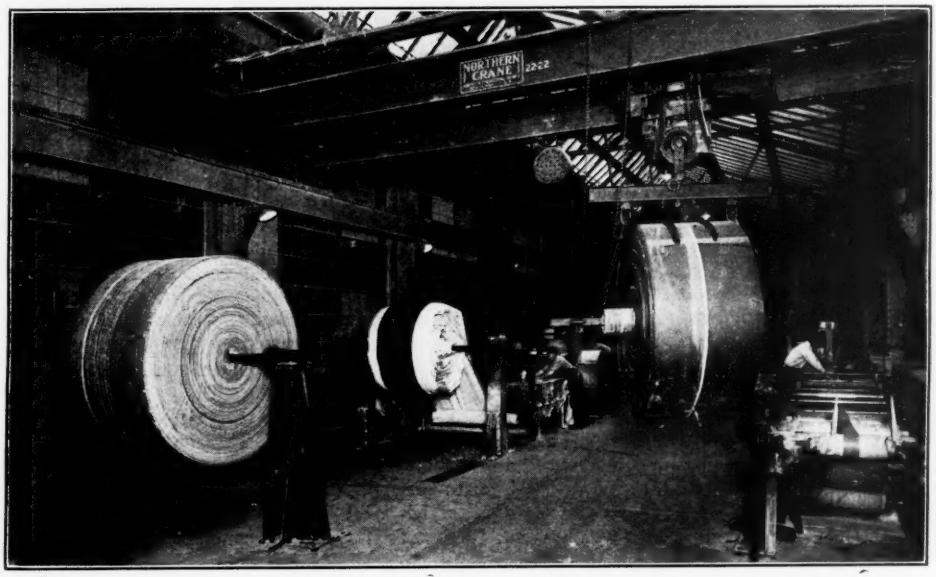
The rubbered duck rolled up with liner on a shell is placed in a duck slitting machine where it is fed over a roll and under knives spaced to regulate the width of strips to be cut. One passage through this machine slits the duck into strips of predetermined belt ply widths. As they are cut, each strip is rolled in a narrow liner on a short shell. In this form it is hung in the stock rack of the belt making machine. Plying these strips of duck into belt form is accomplished by guiding the ends of the desired number of strips through a pair of steel rolls of a small calender at the rear of the machine. The strips thus acted upon are centered upon each other by guides, and are made to adhere by compression of the rolls. The belt center of laminated plies is made first, and receives its wrapping or cover plies by a second passage through the same machine. This time a wrapping ply sufficiently wide for its edges to meet is started with the center plies at the rear of the machine and both are drawn forward together and adhered. As they pass forward, the wrapper is folded over the center by the pressure of concave rollers on either edge of the belt. At this point a seam strip of rubber is guided upon the duck seam to fill and seal the joint. After the third and final calendering the completed belt is guided through a box of soapstone to dust it preliminary to being rolled up on a shell ready for the vulcanizing press. The calendering and folding speed of the belt through the machine is about 100-120 feet per minute.

Transmission Endless Belting

Endless belts were formerly made by stepping down the plies on opposite sides of both ends of a regular belt, stitching the joint through from side to side, and vulcanizing the finished joint. A greatly improved construction is that now in current use: namely, building up the belt endless from one continuous strip of duck with no joint whatever and curing it with a friction surface.

Conveyer Belting

The term conveyer belting is self-explanatory. Such belting is very essential equipment for continuous and automatic movement of raw materials and goods. Its widespread adoption for many varying conditions



Conveyer Belting in the Process of Manufacture

and for indoor and outdoor service has given rise to different special constructions to suit the work.

The range of usefulness of conveyer belting is suggested by the following brief list of materials handled: ice, coal, broken stone, gravel, sand, ground materials, hot char and coke, food products in canneries, bakeries, etc.

Bulk material of all kinds and goods in barrels, drums, etc., are raised in vertical flights by conveyer belting specially adapted for this service. The belting is made after the type used for power transmission because of its steep or vertical flights. That is to say, it is composed of a compact central group of laminated plies of heavy duck surrounded by an envelop ply with a rubber cover. Buckets for scooping up bulk goods or metal arms for supporting barrels, drums, boxes, bags, or other packages are bolted to the belt at intervals. The goods thus carried discharge automatically at a higher level.

Vulcanizing Belting

A belt is vulcanized under tension sufficient to remove practically all the stretch from the belt. The press in which this is done is a very heavy steam platen hydraulic press that may be as much as thirty or more feet long by as much as eight feet wide or any length or width between these dimensions. Enough belts to cover the width of the platens are drawn through the press. Their forward ends are securely gripped in a hydraulic clamp and at the opposite end of the press the belt is similarly gripped. Then the press length of belts is stretched by the pull of a hydraulic stretcher and the press plates closed upon the stretched belts. The heat is usually from twenty to twenty-five minutes for each press length. Each successive press length is stretched and cured in the same way, making a uniform product throughout each roll.

A Modern Belting Department

The types of belting described above have been developed by all the leading mechanical rubber goods plants. An outstanding example of a rubber belting department plan is here shown and some of its important equipment is pictured.

The plan contemplates reception of the previously tested and inspected coated duck from the calender room. This stock enters the belting department at point A and passes on to the duck slitting machines for cutting into ply widths preparatory to being laid up in lengths of specified construction by the various belt calenders or making machines of which there are four in all. On one of these, endless belts only are constructed, on two others transmission belts, and on the fourth and widest, conveyer belts.

Rolls of duck and belting are moved from point to point in the progress of the work by means of overhead hoists on trolleys that serve each machine and vulcanizing press. The latter occupy the full width of the room and are served by a floor track as well as hoists. At the rear of the curing presses is a second-floor track that serves a horizontal vulcanizer as well as all the presses. The movement of all conveyer belts while under construction is handled by a ten-ton electrically operated traveling crane moving the full length of one side of the room.

Vulcanizing Presses

Following their construction the belts pass forward for vulcanization in the various heavy hydraulic presses arranged across the room between the floor tracks. Conveyer belts after vulcanization are returned to the special inspection table and repair press indicated in the lower right corner of the diagram. The finished cured belts in rolls pass out of the making department to the shipping room along a central passage by overhead trolley and through the doorway B. The efficiency of this arrangement allows continuous straight-away movement of the work under construction. Thus production is facilitated, cost of manufacture is minimized, and quality is maintained.

NOTE: We are indebted to the Hewitt-Gutta Percha Corp., Buffalo, N. Y., for the data and illustrations in this article.

Industry and Trade

National Industrial Conference Board Report

Rubber

CONSUMPTION of crude rubber of all classes by manufacturers in February, 32,726 long tons, was 10.8 per cent less than in January and 21.3 per cent less than in February, 1929. Stocks of crude rubber at the close of February were 9.2 per cent greater than on January 31 last, and 46.3 per cent greater than on February 28, 1929.

Automobiles

February production was 339,517 passenger cars and trucks, 19.8 per cent greater than the 283,477 units produced in January, but 31.8 per cent below the extraordinary output of 497,705 vehicles in February, 1929. February this year surpassed February, 1927, by 5.0 per cent and February, 1928, by 1.0 per cent. January this year likewise exceeded January of 1927 and 1928. The rate of production in March shows further gains over February, but manufacturers are gaging their schedules strictly in accordance with actual demands by dealers and consumers. Foreign sales of American motor vehicles in January gained 26 per cent over December, but declined 31 per cent under January, last year.

Petroleum

January figures recently published by the Bureau of Mines indicate that 6,500,000 barrels of gasoline were added to storage during that month. Preliminary estimates for February indicate that there were about 3,500,000 barrels added to storage, bringing the gasoline stocks of the country up to nearly 53,000,000 barrels, as of March first. These stocks on March first established a new high record and are, of course, too high, even in spite of increased consumption.

Proration agreements and tests have recently been completed in Oklahoma and California. The daily average crude oil production for the United States for the week ending March 8, 1930, was 2,535,350 barrels, reaching the lowest point recorded since December 8, 1928.

Polishing Hard Rubber Goods

The finishing of hard rubber surfaces is accomplished by rubbing down and smoothing processes in which abrasives and polishes are applied by wheels or buffs of different sorts. Typical highly polished hard rubber articles are combs, hard rubber syringes, fittings, and parts machined from sheets, rods, and tubing.

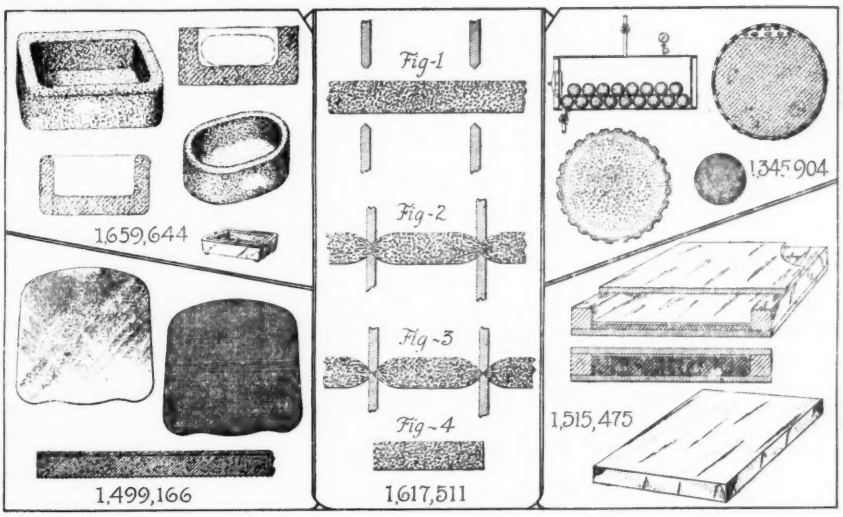
Special large wheels or buffs are made of dry corn husk clamped on an arbor. The husks have siliceous layers in their make-up, and in cross-section present keen edges that rapidly cut down any hard rubber surface pressed against a husk buffing wheel. In service husk buffs are kept wet with water and are applied with fine rottenstone. They are used for preliminary dressing; the work is very wet and dirty. For rubber cutting, fine pumice and silica are also used.

After washing in clean water, the goods are fine buffed with flannel buffs treated with oil, fine rottenstone, and rouge as final polishing. Final luster is obtained by buffing with special lime finish, which is said to be the international standard by which all other grades are measured. It produces the highest finish on metals, pearl, and hard rubber.

Sponge Rubber Manufacture

JOSEPH ROSSMAN

A Survey of United States Patents Relating to Making Sponge Rubber and Its Industrial Applications



SPONGE rubber has many desirable structural properties, and it is, therefore, not surprising to see its ever increasing applications in many diverse and widely scattered fields. An enumeration of the uses to which it has been put would probably fill several pages. Sponge rubber has been used in mats, tires, inner tubes, balls, toys, shoes, apparel, tanks, horns, steering wheels, structural material, and machinery. Soft sponge rubber is compressed readily and has valuable cushioning properties. It is also light in weight and does not deteriorate by use. Hard vulcanized sponge rubber has valuable structural properties on account of its lightness and rigidity.

The term sponge rubber has been applied indiscriminately to two distinct kinds of aerated rubber. Sponge rubber strictly applies to cellular rubber having intercommunicating cells such as in the ordinary bath sponge. Cellular rubber on the other hand should be applied to rubber having a honey-comb cell structure, the cells not communicating with one other.

The Process of Making Artificial Sponge

A PROCESS of making toilet sponge is illustrated in U. S. Patent No. 1,045,234, November 26, 1912, to Willis and Felix, in which a quantity of the mixed compound is molded into the form approximating the desired shape of the completed article. The curing oven is constructed so that live steam may be admitted to the interior and in contact with the material to be cured. Vulcanization is accomplished by closing the oven and admitting steam until the material is cured. The action of the steam has the effect of forming a tough skin or covering around the exterior of the article.

The next step is to break down the walls of the interior structure, thus relieving the vacuums created by the contraction of the gases and permitting the air to enter the interior of the structure, causing the material to assume its normal condition. The cell walls may be broken down by puncturing them, as for example, by passing needles through the material; but the most approved method consists in passing the material between closely confined rollers. The apparatus comprises two rollers covered with hard rubber and held together by elastic pressure.

Cutting Sponge Rubber

MUCH difficulty has been experienced in cutting sponge rubber so as to secure perpendicular edges, due to the extreme compressibility of the material and its tendency to crowd to one side or bulge out before the knife begins its cutting operation.

The method of cutting sponge rubber according to U. S. Patent No. 1,617,511, February 15, 1927, to Balch, consists in compressing the material equally from opposite sides along the entire length of the desired cut and severing it on the median line of the compressed portion and while so compressed. In the group picture, Figure 1 is a sectional view showing a sheet of sponge rubber and a pair of opposed cutting dies spaced therefrom. Figure 2 is a similar view showing the dies as having approached each other to compress the sheets. Figure 3 is a similar view showing the position of the dies at the completion of the cutting operation, and Figure 4 is a sectional view of the finished article.

Such a rubber sheet is cut by placing it on a wooden die block and subjecting it to a thin sharp cutting die; the result is to force the upper surface of the sheet downward for a considerable distance before the knife begins to penetrate the rubber. The extreme elasticity of the material tends either to deflect the cutting die, or the material within the body of the sheet is deflected laterally to one side of the line of cut. Such objections are overcome by using opposed dies having blunt cutting edges formed by plane faces meeting at an angle not less than 90°. When such cutting dies are brought together with the stock between them, the first action is to compress the sheet from opposite sides for a distance on each side of the cutter edges and along the length of the cut, and this compressing continues until the material is compressed so that the portion between the cutters is substantially solid or the cells collapsed.

Soap Dishes from Sponge Rubber

U. S. PATENT No. 1,659,644, February 21, 1928, to Vernet, covers a sponge rubber soap dish that absorbs moisture and dirt from soap and keeps the bath room or sink neat. The dish is cleaned by squeezing and rinsing in water. It is formed in one piece by cutting a receptacle from the body of the sponge. See group illustration.

Chair-Seat Cushions

THAT comfortable and practical chair pads have been made from sponge rubber is shown in the picture. In U. S. Patent No. 1,499,166, June 24, 1924, to Frazier, the

pad combines advantages of a sponge rubber pad with that of a felt one, being provided with a top layer of felt. In applying the felt layer to the sponge rubber body, the bottom of the felt and the top of the pad are coated with rubber solution; after this the faces are cemented together and vulcanized.

Sponge Rubber Balls

ACCORDING to U. S. Patent No. 1,345,904, July 6, 1920, to Wishart, sponge rubber balls are made having relatively large cells at the center and decreasing in size toward the exterior where the cells are so minute that the surface is practically smooth, thus permitting necessary wear, while the large cells give unusual resiliency to the article. See group illustration.

The following composition is employed: smoked sheet 70 parts, sulphur 6 parts, ammonium carbonate 8 parts, zinc oxide 12 parts, and magnesium oxide 4 parts. The composition is placed in perforated molds so that during vulcanization the gas in the cells adjacent the outer edges of the composition will escape more readily than the gas at the central portion, with the result that the cells are largest at the center of the mass and gradually reduce toward the edges.

Continuous Process of Making Sponge Rubber

IN the manufacture of sponge rubber articles it is necessary to use a mold capable of withstanding the internal pressure generated in the rubber during vulcanization. This has always been a limiting factor on the size of sponge rubber articles and has prevented the manufacture of strips of any substantial length.

According to U. S. Patent No. 1,629,013, May 17, 1927, to Wedlock, this difficulty is overcome by wrapping the compound in a cloth adapted to remove longitudinal strains from the compound, which is then moved progressively through a heater so that the rubber mass is subjected to the correct vulcanizing temperature for the proper length of time.

For example, if a strip of sponge rubber of rectangular cross-section is desired, a die is used having the interior opening of such cross-section. This heated die has end portions extending beyond the heated zone so that the compound adjacent the heated zone will not expand unrestrictedly by action of radiated heat. A strip of sponge rubber compound calculated to fill the die on vulcanization is then wrapped in cloth and drawn through the die; the drawing strain is exerted on the cloth cover. If desired, the cloth may be wrapped completely around the rubber, or a narrow slot can be cut in the die and then the cloth folded about the rubber with the two meeting edges of the cloth allowed to extend out of the die through the slot. As the rubber expands, the pressure will draw sufficient cloth into the die so that the rubber will completely fill the die; the cloth is used as the medium for exerting drawing pressure on the rubber during the curing operation.

Sponge Rubber Mixes

A LARGE variety of mixes has been proposed for producing spongy or cellular rubber, all of which are based on the principle of incorporating with a rubber mix, gas-forming substances which, on the application of heat, strive to escape from the mass, giving it a porous or cellular formation. This formation takes place during or at some stage of vulcanization. Water or ammonium salts such as ammonium carbonate or combinations of water and ammonium carbonate, or in fact, any substance which, upon being heated to the vulcanization temperature, would evolve volumes of gases, have been used.

A recent U. S. Patent No. 1,602,624, October 12, 1926, to North, describes the manufacture of semi-hard sponge rubber by preparing a suspension of 15 parts ammonium carbonate to 8 parts mineral oil and incorporating the required amount of this suspension into the compound being mixed on the mills after the rubber has been completely plasticized and during, or preferably after, the addition of the other compounding ingredients thereto.

Accelerators of vulcanization, such as aldehyde ammonia, paraphenylene diamine, hexamethylene tetramine, and the like, may be suspended in a small quantity of a high boiling liquid and this suspension then used in the proper amount in the rubber mix. This process is of special value to avoid the use of any water in the mix as might be the case if a soft sponge rubber is being prepared by the usual method.

Structural Material

A RECENT U. S. Patent No. 1,712,965, May 14, 1929, to Maranville, describes an interesting structural material of great lightness and strength adapted for use in aircraft construction or in other situations where these qualities are desired. This material has most of the advantages of wood and many superiorities thereover. It can be readily sawed without splitting or shattering, and attached with nails, screws, bolts, or rivets. It is weatherproof, watertight, practically non-inflammable, and will stand rough usage. It consists of a core of cellular hard rubber having facing sheets of metal.

It is essential that the metallic facings shall be bonded to the cellular hard rubber so that a durable adhesion is obtainable, capable of remaining permanent under bending, denting, and other stresses to which the material is subjected in use, and also adapted to withstand the operations which may be employed in fabricating the material, such as sawing, drilling, nailing, screwing, or riveting.

Generally speaking, the direct adhesion of hard rubber to plane metal surfaces is very weak and this is particularly true in the case of aluminum and its alloys. The composite structure, therefore, includes a bonding or cementing layer between the cellular hard rubber layer and each of the metal facing layers, these bonding layers being flexible or non-brittle and of such nature as to adhere both to the rubber and the metal. The bonding layer may be applied in solution or otherwise. A tough, balata-like, thermoplastic, artificial derivative or isomer of rubber prepared by reacting undissolved rubber under the influence of heat with p-phenol sulphonic acid or equivalent reagent, as described in U. S. Patent No. 1,605,180, November 2, 1926, to H. L. Fisher, is used as bonding agent.

The metallic facing sheets may be applied to the layer either before or after the latter has assumed its cellular, rigid condition. In either case the adhering face of the metal sheet is thoroughly cleaned, as by pickling and sandblasting, the bonding layer is applied as by painting it on the cleaned metal surface, and is allowed to dry to a tacky condition, and the sticky-faced metal sheet is then applied to the rubber sheet and caused to adhere thereto, with the aid of heat and pressure.

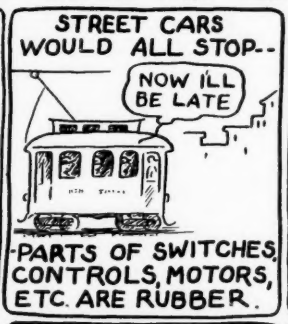
When the metallic facing sheet or sheets are applied to the rubber sheet before vulcanization, the rubber compound can be calendered upon the sticky-faced metal sheet, overlaid with a similar metal sheet if the board is to be armoured on both sides, the article placed between steamheated press platens with sufficient clearance between it and the upper platen to allow for the desired ultimate thickness, and there vulcanized. The rubber is sponged by the blowing agent contained therein and the heat and the pressure cause a firm adhesion between it and the facing sheets through the bonding layers.

(*To be continued.*)

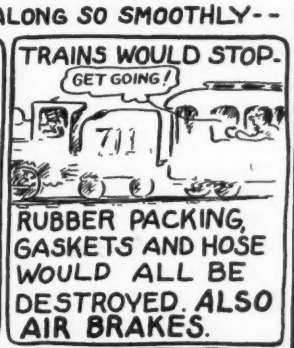
WHAT A GREAT THING IS RUBBER

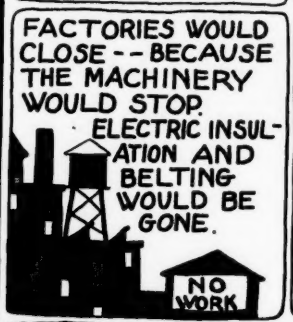
HERE ARE A FEW THINGS THAT WOULD HAPPEN IF ALL THE RUBBER NOW IN USE WAS SUDDENLY DESTROYED -- JUST THINK WHAT AN IMPORTANT PART **RUBBER** PLAYS IN KEEPING THIS 'OLE WORLD "BOUNCING" ALONG SO SMOOTHLY--

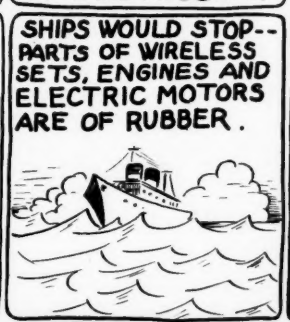
-BECAUSE TIRES & INSULATION WOULD BE DESTROYED.

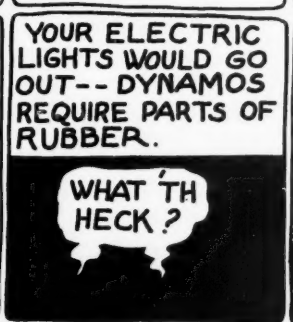


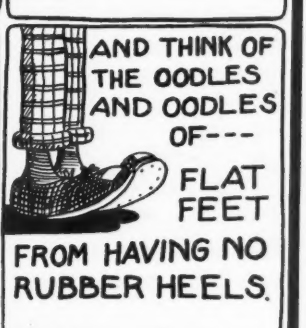
-PARTS OF SWITCHES, CONTROLS, MOTORS, ETC. ARE RUBBER.











"NEITHER WOULD YOU HAVE ANY ERASER ON YOUR PENCIL TO RUB OUT ALL THIS JUNK"

SENTELL-

Cog Belt Drives *for* Industrial Service

POWER transmission by V-section endless belts operating on V-grooved pulleys has become well established in modern engineering practice by both light and heavy work by reason of its distinct advantages, convenience, and economy. Rubber cog belt drives are a notable development of the V-belt type. This special construction is of trapezoidal cross-section as shown in Figure 4. The pulley grooves in which cog belts are run are V-shaped either coming to a sharp angle at the bottom or terminating in a small flat base.

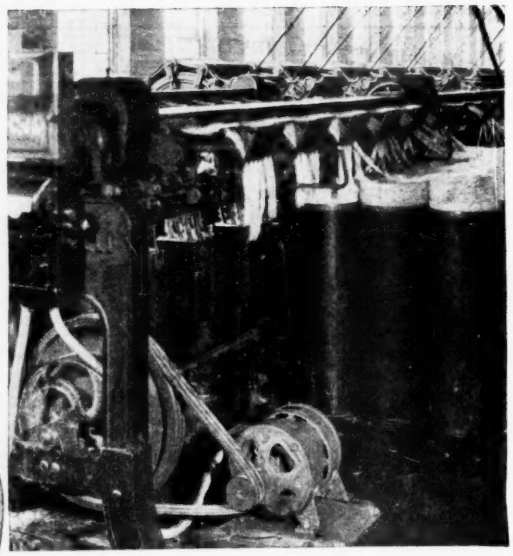


Fig. 1. Textile Mill Application

Cog Belt Construction

The cog belt differs radically from all other V-belts in appearance and construction. The mechanical principles involved in its design render it superior for efficiency and durability in service. As constructed, a cog belt comprises three zones or sections as indicated in the cross-sectional Figure 4. The lower of these sections is the cog or compression zone. The middle section is the neutral zone made of high tensile rubberized cords for strength. The upper zone is the tension zone, giving pliability as pictured in Figure 2.

Fig. 2. Illustrating Flexibility of Cog Belts

Compression Zone

The cog zone gives the name to the belt. The function of this zone is not for the transmission of power but by its cog formation to provide flexibility by compression and to prevent buckling as the belt flexes in action around the pulley. It is thus caused to hug rather than resist the pulley arc, and at the same time present true even surfaces to the sides of the groove.

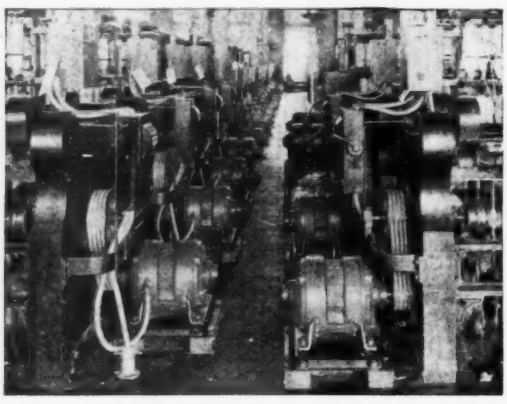


Fig. 3. Cog Belt Drives on Spinning Frames

The tough fiber and rubber composition used in the cogs is especially important. The fibers are made to run crosswise of the face, giving cross-sectional rigidity to the cogs, preventing distortion. This position of the fibers causes their ends to engage the sides of the pulley groove, giving a tough wearing surface of great gripping power. In fact, in this position the fiber creates a crosswise reenforcement overcoming any tendency of the belt to crush by the wedging action of the pulley groove. This rigidity of cross-section is essential to the successful operation of any V-belt.

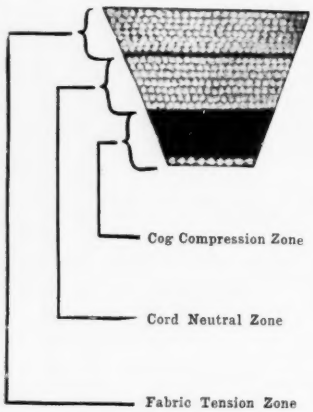


Fig. 4. Transverse Section of Cog Belt Showing Zones

Tension Zone

In service the tension zone of the belt, as shown in Figure 4, works under strain and must be pliable; therefore it is built in a series of convolute layers of bias-cut elastic fabric. Since the belt is die-cut and not molded, the ends of the threads in these layers are exposed to the sides of the pulley groove and form a part of the driving surface. It is impossible for these layers to unravel because being cut on the bias, the weave of the fabric can not unravel, and

thus presents a good wear resisting surface with a high coefficient of friction against the walls of the pulley grooves.

Neutral Zone

The neutral zone lies between the compression and tension zones and is the strength member. It consists of convolute layers of parallel cord fabric. In constructing the belt the cords are applied under great tension, to remove the stretch from each layer and obviate liability of the belt to stretch in service. The neutral zone has the sides of the cord cables as its pulley contacting surface. Thus the entire riding surface of the belt is made up of the ends of threads in the bias fabric of the tension zone, the sides of the cord cables of the neutral zone, and ends of fibers in the cogs of the compression zone. All of these parts contain certain proportions of rubber. Thus in service a belt of this construction will operate with much less slippage, stretch, and heating.

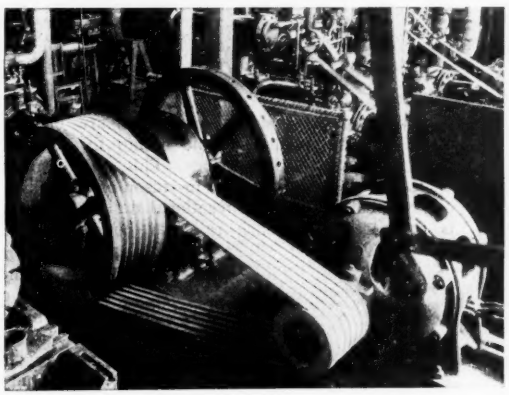


Fig. 5. Cog Belts Used on Compressor Drive

Application

As applied in service, the cog belt drive consists of one or more cog belts operating in the grooves of a driving and a driven pulley. A multiple V-belt drive is one having a series of grooves side by side in both pulleys, each groove accommodating a V-belt. See Figures 1, 3, 5, and 6. Pulleys with two or more grooves for multiple drive are sometimes called sheaves. The number of belts required in a given case depends upon the horsepower to be transmitted, the speed, and other characteristics of the driven load.

Power transmitted by a cog belt is effected by the wedging action of the belt section between the sides of the pulley groove. The belt is designed to ride thus in the groove, but should never touch its bottom side. If the belt touches or rides on the base of the groove, the wedging action is lost, causing the belt to slip and generate heat. Further, a space between the base of the belt and the base of the groove prevents trapped air, which especially at high speeds, would reduce the belt contact and driving power.

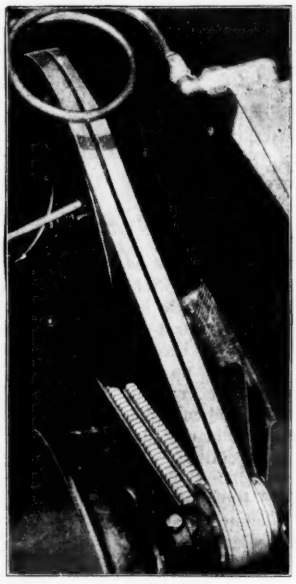


Fig. 7. Refrigerating Unit

Among the advantages of the V-form of belt drive are: smaller pulleys and extremely short center to center distances are possible without idlers; exact speed ratio is maintained through greater gripping power; smooth starting and running result by the "seating" action of the belts in the pulley grooves, thus absorbing shocks of power suddenly applied; no vibration is transmitted between the driving and driven mechanisms; therefore the belts are particularly recommended wherever quiet operation is essential, notably in automobile or refrigeration machine operation.

Adaptability

The power load or capacity for service possible with cog belts covers a wide range extending to upwards of 300 h.p. This makes them adaptable practically for the operation of essentially all industrial purposes. A few typical applications are represented in the illustrations.

Figure 1 pictures a cog belt connection between a motor and the driving pulley operating a line of textile machines. Figure 3 shows a spinning room in which each machine is driven individually from a separate motor, the driving connection of each being established by means of a cog belt. In Figure 5 is illustrated the application of a cog belt comprising six individual belt units serving to connect a motor for operating a compressor unit. Figure 6 shows a three-belt unit employed to run a paper cutter; while in Figure 7 a two-belt unit is connected for driving a refrigerating unit. Two very familiar applications of cog belt drives are as fan belts for automobiles and as the motor connection in household refrigerators.

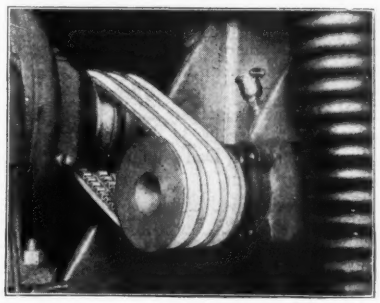


Fig. 6. Paper Cutter

Figure 8 represents a longitudinal section of a cog belt and should be examined in connection with Figure 2, to note the accommodation afforded by the cogs when the belt is flexed. Figure 8 also shows the frictional surfaces presented to the pulley grooves. It is supplemental to the cross-sectional view of the belt construction indicated in Figure 4 and exhibits the "raw-edge" construction that gives the high coefficient of friction mentioned above, thus reducing slip and permitting reduced belt tension.

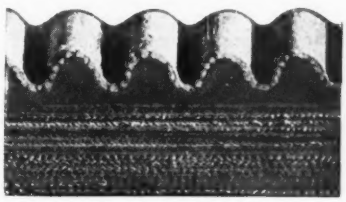


Fig. 8. Longitudinal Section of Cog Belt

A brief list of the many industrial applications for which the cog belt may be used would include the following: fans, blowers, pumps, compressors, machine tools, textile machinery, refrigerators, paper mills, conveyers, laundry and baking machines.

The illustrations and data from which this article was written were supplied by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

April Showers Bring That Are

Floral and Other Fanciful Designs Now Invade the Rainwea

Lucas-Kanarian

Cotton Twill Shower Print Cape

WHEN Jupe Pluvius and Dame Fashion get together, there's no telling what may happen. But you can bet something out-of-the-ordinary will materialize. (If you doubt that, gaze upon these coats. Stunning?) And the fabrics used! Fancy confiscating dimity, pride of Dad's underwear, for a raincoat. But it certainly makes an attractive garment. Nor is that the only unusual textile employed, and the variety of brilliant colors shame even the rainbow. This handsome array of ultra-modern Shower Print raintogs comes from a prominent fabric manufacturer.[1]

The thought nowadays is, as Miss Grace Farrell, of the advertising department of this concern, expresses it, that one need not wear dark, dull clothes or be unattractively dressed merely because the sun isn't shining. Consider, also the psychological effect of bright colors on cloudy days; the colors make you feel much more cheerful. A raincoat, of course, should harmonize with and complete milady's ensemble. Just as a woman has one sports costume for golf and another for tennis, so should she wear a different raincoat at different times. If she's at a resort, she chooses one type, if in town, another.

Thus, at a recent exhibit of these garments the theme was, "Raincoats to suit seasons and occasions." At that display Fred Galbraith, style director, explained the nature of the fabrics, pointing out how excellently adapted to raincoats were weaves of widely varying character and highly styled designs, never before so used.

"The current trend toward individuality in fashion has had its influence in every field," he said. "In the raincoat industry it has crystallized in a demand for raincoats which relate harmoniously with the remainder of the costume, and which are suited in fabric, coloring, and design for varying seasons and occasions. This new movement away from the in-season-and-out raincoat in small, conventional designs is sponsored by French rainwear houses championing unusual weaves in gay effects and ensemble prints.

Lucas-Kanarian

Cotton Foulard Rainwear Ensemble

"As a result, the entire fabric field is open to the raincoat manufacturer, offering limitless ways to inject new style interest and individuality in a garment so conventionalized in the past as to become practically a uniform. To style up this commodity by the use of cottons, rayons, percales, and flannels in frock and ensemble prints will go far toward eliminating undesirable and profitless price cutting.

"The resort coat, destined for prominence this summer, features Rayon Piqués, Antibes Prints, Sport Flanoteen, and a highly styled sheer Aristo Batiste. Town and country types are given new interest by smart façonnés, cotton foulards, cotton tweeds, rayon flat crepe, and Zamora Lustre. The latter compare favorably with the so-called all-silk taffeta previously used in this connection, and the price is about one half."

Miss Martha E. Dodson, in charge of the sales promotion department and the experimental workshop where all model raincoats are created, believes also that with the vogue of capes at its height, rain capes are exceptionally popular this season. Here the unit design may be utilized with telling effect for distinctive garments in popularly priced fabrics. A rain cape in a colorful butterfly unit design on a rubberized cotton twill is suitable for beach wear. As cotton twill is a familiar raincoat medium in plain shades or ordinary tweed effects, attention was concentrated upon the effectiveness of the pattern on a brilliant green ground. The cape, shown in the illustration, buttons snugly to the neck in front and is slit diagonally to allow the arms through.

A stunning fleur de lys motif appears on a rayon flat crepe in blue on beige. Since the repeat of the pattern is about fifty inches wide, it can be taken from the ultra-competitive class and developed to permit profitable pricing.

The practicality of sheer cottons for raincoats is demonstrated by an Aristo Batiste model in a gay pennant design. The sheer cotton raincoat is excellent for travel or vacation, for it can be folded to very small size.

One of the most unusual fabrics is a

Lucas-Kanarian

Rubberized Zamora Lustre Raintogs

[1] Pacific Mills, 24 Thomas St., New York, N. Y.

Flowers—on Raincoats Different

Field on Fabrics Never Before Used by That Industry

tawny orange dimity check of all-cotton construction. Ordinarily for men's athletic underwear, this material, when suitably rubberized and colored, develops a workable texture and illustrates how a fabric seemingly widely separated from the raincoat industry may be so used.

Equally unusual but as smartly effective is a beach suit of Sport Flanoteen in a tri-color blazer stripe. This all-cotton flannel rubberizes well, and results in a dashing costume for resort wear. The short military jacket with cape sleeves is coupled with a wrap-around skirt.

Pamico Prints are used, notably in lining heavy, simulated-leather coats. One model is in black with red trimming, another brown. Linings in small prints and tweed effects are suggested in colors for costume harmony. Rubberizing the reverse side of any fabric also has possibilities.

Antibes Prints, a new wash fabric of popular waffle construction, appear in pretty raincoats, interpreting a broken plaid print in two-color combinations. All-cotton foulard, an outstanding success in regular dress fabric, is recommended for town wear in a number of small, distinctive designs, including a spatter dot print on a dark ground, blossom print in green and eggshell, and a navy and white

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Cape Coat with Hat to Match

pattern. This coat is included among the illustrations. The dots break the midnight blue background of a belted, tailored coat with a hat to match.

Of more formal character are creations in Zamora Lustre. Two- and three-tone

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Rayon Flat Crepe in Tweed Plaid

modernistic prints in this fabric make attractive ensembles with frocks in one or more colors of the print. Neutral backgrounds predominate. Two rubberized Zamora Lustre models are shown here. The first, very practical, conforms to the new femininity of detail, with its scarf collar and high-belted waistline. The diagonally inserted pockets are distinctive. A hat of matching print completes the outfit. The other Zamora Lustre will fascinate every style-loving woman. Creamy blossoms swirl over orange-red in a cape coat for spring and summer. A triple tier of shoulder capes swings in the directoire manner. Note the chic hat.

Plain color coats in black, white, and contrasting combinations of the two always satisfy. A black jacquard rayon coat of "natty" tailored lines proves exceptionally interesting because of its smart façonné effect. A white Zamora Lustre, copied from a policeman's waterproof, is made more stunning by its black trimming.

Other good-looking coats also are pictured. One of rayon flat crepe in delicately shaded tweed plaid designs boasts a novel shoulder cape, cut with a pointed extension in the back, which buttons over the belt. See also the wide bands on the sleeves, puffing them. Do not the wide collar and the broad lapels command attention?

Lucas-Kanarian

Laird Granelle Tailored Cape Coat

Laird Granelle, a soft tailored tweed-like cotton, successfully promoted for frocks, suits, and ensembles, is rubberized for smart duty in a tailored cape coat. The shaded pastel tones of the broken plaid go well with the rest of one's costume. In the coat here illustrated the shoulder cape and double-breasted front add a decidedly swanky note.

Nor is the older woman with conservative taste neglected. A chic coat featuring a dainty black pattern on silver is suited for town. Its tailored lines enhanced by the neat belt make an attractive garment. Instead of buttons, it sports buckles with short straps for fastening down the front. This is repeated on the sleeves.

The new silhouette is reflected also in raintogs. A beautifully fitted coat, and these new materials lend themselves well to such treatment, has the high form-fitting waistline and the flare skirt, really a princess model.

Zipper devices extending down the front and across the pockets are novel features. In many cases round brass buttons replace familiar bone or hard rubber ones, adding a "nobby" touch. Pockets appear in all sizes and shapes, emphasizing smartness.

Truly, this new rainwear would arouse a woman's envy and despair if her neighbor owned any of these irresistible coats and she didn't; to the fortunate wearer it would be her pride and joy. And who could blame her?

American Rubber Technologists

Over 400 technical superintendents, chemists, and process development engineers in rubber plants and laboratories have submitted biographical data, to the interest of our readers. Was yours included? If not, we shall be pleased to publish it also. Shall we send you a data sheet?

HARLAN ARMSTRONG DEPEW, chem. *b.* Sept. 25, 1891, Chelsea, Mich.; B. S., 1913, M. S., 1914, U. of Mich.; Ph.D., 1929, Columbia U.; U. S. Bureau of Mines, 1915-1918; U. S. Chem. Warfare Service, 1918; research division, Firestone T. & R. Co., Akron, O., 1919; research division, New Jersey Zinc Co., Palmerton, Pa., since 1919. *Author:* Papers relating to testing, aging, and reenforcement of rubber, and rubber for acid tank lining, etc. *Member:* Am. Chem. Soc., Asso. Am. Adv. Sci.; Chairman sub-committee XIV of D-11, Am. Soc. Test. Mats., Sigma Xi, Phi Lambda Upsilon. *Address:* Residence Park, Palmerton, Pa.

Robert Wharton Moorhouse, chem. engr. *b.* Nov. 2, 1892, Philadelphia, Pa.; chem. engr. course at M. I. T., class of 1914; prod. supt., R. T. Moorhouse Paper Co., Philadelphia, Pa., 1914-1918; prod. engr., Barrett Co., Frankford, Pa., 1918-1926; chem. engr., Goodyear T. & R. Co., Akron, O., 1926-1928; mgr. chem. engr. div., development dept. since 1928. *Author:* Misc. reports on temperature control and engineering subjects connected with coal tar or rubber. *Member:* Am. Chem. Soc., Am. Soc. Mech. Eng., Fellow Am. Inst. of Chem., Alpha Tau Omega. *Address:* 3009 Medina Rd., Fairlawn, O.

G. H. Gates, chem. *b.* Aug. 16, 1902; Ph.B., Brown U., Providence, R. I., 1923; compound development, Fisk Rubber Co., Chicopee Falls, Mass., 1923-1928; chf. chem., American T. & R. Corp., Akron, O., 1928-1929; mechl. goods compounder, Goodyear T. & R. Co., Akron, O., 1929. *Member:* Am. Chem. Soc., Akron Rubber Group, Mason. *Address:* 214 Sackett St., Cuyahoga Falls, O.

William Harold Fleming, mech. eng. *b.* Feb. 4, 1891, Paintvalley, O.; Akron U. and M. I. T., mech. eng. B. S., 1916; Goodyear T. & R. Co., Akron, O., since 1912 as: efficiency man, factory course, 1916; div. supt. tires, 1920-1922; mgr. material control, 1922-1926; div. supt. dept. 101, 1926-1927; supt. prod. Plant No. 2 since 1927. *Member:* Delta Tau, Lone Star, Theta Tau, Exchange Club, Am. Chem. Soc., Akron Group. *Address:* 775 Ridgecrest Rd., Akron, O.

Grover W. Webb, supt. *b.* Mar. 9, 1889, Spencer, W. Va.; Mountain State Com. Coll., 1912, accounting, gen. business course, C. P. A.; field supervisor, Carter Oil Co., 1913-1915; supt., Owens Cement Products Co., 1915-1921; mechl. supervisor, Diamond Match Co., 1921-1923; asst. supt., 1923, production supt., 1929, Textile Rubber Co., Medina, O. *Author:* Development of rubber spools for cotton mill use and rubber rods for bleaching machinery in the rayon industry. *Member:* Junior Order United American Mechanics. *Address:* 241 Smith Rd., Medina, O.

Fred Copeland Batchellor, sales mgr. *b.* June 21, 1887, Littleton, N. H.; student, Dartmouth Coll., M. I. T., and Worcester Polytech. Inst.; A. B., Dartmouth Coll., 1910; pat. dept., U. S. Rubber Co., New York, N. Y., 1913-1917; Sergt. 307th U. S. Inf., 1917-1919; U. S. Rubber Co. (Hartford Rubber Works), 1919-1921; gen. labs., U. S. Rubber Co., New York, N. Y., 1921-1923; sales dept., Ault & Wiborg Co., New York, N. Y., 1924-1929; sales mgr., General Atlas Carbon Co., New York, N. Y., 1929. *Member:* Am. Chem. Soc., Kappa, Kappa, Kappa Soc., Dartmouth, Dartmouth College Club of N. Y. *Address:* General Atlas Carbon Co., 60 Wall St., New York, N. Y.

Roscoe Marshall Gage, chem. eng. *b.* Mar. 13, 1888, Toledo, O.; B. of C. E., U. of Mich., 1912; chem. engr., Fisk Rubber Co., Chicopee Falls, Mass., 1912-1916; chf. chem., N. J. Car Spring & Rubber Co., 1916-1917; First Lieut. Chem. Warfare Service, U. S. A., 1917-1919; chf. chem., Portage Rubber Co., Akron, O., 1919-1921; supt., Seiberling Rubber Co., Akron, O., 1921-1922; factory mgr., Vulcan Rubber Co., Brooklyn, N. Y., 1922-1925; chem. engr., Hood Rubber Co., Watertown, Mass., 1925-1928; chem. engr., Fisk Rubber Co., Chicopee Falls, Mass., since 1928. *Author:* "Evaluation of Crude Rubber." *Member:* Amer. Inst. Chem. Engrs., A. C. S., (Rubber Division), committee D-13, Am. Soc. Test. Mats., Mason, Shriner. *Address:* 36 Sumner Terrace, Springfield, Mass.

Charles Edward Bishop, engr. *b.* Oct. 18, 1881, Loudonville, O.; student one year at Ohio State U.; worker, golf ball, mechl. goods, and hose depts., B. F. Goodrich Co., Akron, O., 5½ years; golf ball and hose depts., Republic Rubber Co., Youngstown, O., 1½ years; foreman, mill and refiner dept., Alkali Rubber Co. (now Philadelphia Rubber Works), Akron, O., 1½ years; supt. solid tire div., 6 years, supt. reclaiming div., 7½ years, Goodyear T. & R. Co., Akron, O.; v. pres. and fact. mgr., Akron Rubber Reclaiming Co., Barberton, O., 2 years; fact. mgr., Premier Rubber Mfg. Co., Dayton, O., 1 year; consulting engr. for design, erection, and operation of reclaiming plants; fact. mgr., Rubber Recovery Co., Akron, O. *Address:* Box 50, E. Market St. Extension, Akron, O.

Val L. Follo, supt. *b.* Escanaba, Mich.; Northern State Normal Sch.; Lit. Law, U. of Mich., 1917; highway, bridge construction, Milwaukee County, Wis.; school principal, Bark River, Mich., 1912-1913; U. S. Army, A. E. F., 23rd Engrs., 1917-1919; production control dept., 1919-1926, gen'l foreman, crude rubber dept., 1926-1929, Goodyear T. & R. Co., Akron, O.; division supt., Goodyear T. & R. Co., Gadsden, Ala., 1929. *Address:* Gadsden, Ala.

Clifford W. Sanderson, chem. *b.* July 3, 1894, Phillipston, Mass., B.Sc., Worcester Polytechnic Inst., 1916; chem., Fisk Rubber Co., Chicopee Falls, Mass., 1916-1927; compounder, Goodyear T. & R. Co., Akron, O., since 1928. *Author:* Papers on compounding and testing rubber. *Member:* Am. Chem. Soc., Mason. *Address:* Stow, O.

Kenneth J. Durant, chem. *b.* 1897, Akron, O., Hiram Coll., 1915-1918; A. B., 1919, M.Sc., 1920, Ohio State U.; chem., Goodyear T. & R. Co., Akron, O., 1918-1920; gen'l lab. research and development, American Hard Rubber Co., Butler, N. J., 1920-1925; compounder and plant chem., American Hard Rubber Co., Akron, O., plant since 1925. *Member:* Alpha Chi Sigma, Phi Lambda Upsilon, Sigma Xi, Masonic bodies. *Address:* American Hard Rubber Co., Akron, O.

Christian A. Ostby, engr. *b.* Aug. 28, 1884, Norway. Providence Tech. H. S., Providence, R. I., 1903; machinist, Lange & Fischer, 1½ years; draughtsman, D. & W. Fuse Co., 2 years; draughtsman, American Locomotive Automobile Co., 2 years; mill draughtsman, 1909-1913, master mechanic, 1913-1929, Bristol, R. I., plant, U. S. Rubber Co.; plant engineer, Lycoming Rubber Co., Williamsport, Pa., since Aug., 1929. *Member:* Masons. *Address:* Lycoming Rubber Co., Williamsport, Pa.

Leslie Vail Cooper, chem. *b.* Oct. 22, 1900, Inland, O.; B. S., U. of Akron, 1920; research compounder, Firestone T. & R. Co., Akron, O., since 1922. *Author:* "Softeners and Antisofteners," with Zimmerman. *Member:* Asso. mem. Akron Section Am. Chem. Soc., and Akron Rubber Group. *Address:* 876 Oakland Ave., Akron, O.

David Earle Jones, chem. *b.* Utica, N. Y.; A. B., Colgate U., 1917; with W. S. Murray, consulting chemist, Utica, N. Y., 1917-1918; Ordnance Dept. U. S. A., 1918-1919; chem., 1919-1927, chf. chem., since 1927, American Hard Rubber Co., Butler, N. J. *Member:* Phi Beta Kappa, Delta Upsilon, A. A. A. S., A. S. T. M., Am. Elect.-Chem. Soc., A. C. S., Mason. *Address:* South Gifford St., Butler, N. J.

Henry J. Conroy, chem. *b.* Mar. 21, 1889, Boston, Mass.; A. B., Harvard Coll. 1910, A. M., Harvard Grad. Sch., 1911; chf. chem., 1911-1913, supt., 1913-1918, Bay State Insulated Wire & Cable Co., Boston, Mass.; compounder, Goodyear T. & R. Co., Akron, O., 1919-1926; chf. compounder, General T. & R. Co., Akron, O., since 1926. *Address:* Canton Rd., Akron, O.

Fred L. Haushalter, engr. *b.* Jan. 13, 1893, Akron, O.; B. E. E., 1917, E. E., 1928, Ohio State U.; development dept. National Lamp Works, 1917; Lieut. Searchlight Engrs. U. S. A., 1918; lab. testing engr., 1919-1927, development engr. mechl. goods since 1927, B. F. Goodrich Co., Akron, O. *Author:* Papers on pole line costs and effect of ozone and corona on rubber, etc. *Member:* A. I. E. E., Mason. *Address:* 467 Madison Ave., Akron, O.

Uses of Rubber Latex

THE following abstracts of United States patents relating to the various uses of rubber latex are concluded from INDIA RUBBER WORLD, March, 1930.

73. Snelling, 1,630,721. May 31, 1927. Sponge rubber is made by cooling rubber latex until part of the water crystallizes, then coagulating the resulting rubber network.

74. Harris, 1,631,265. June 7, 1927. An adhesive, comprising a dispersion of benzonite, silicate of soda, water, and rubber, is dissolved in a rubber solvent.

75. Loomis and Stump, 1,634,293. July 5, 1927. Articles are molded by forming a suspension of a filler, adding latex, partially coagulating it, removing the liquid content, drying, and pressing.

76. Hadfield, 1,635,576. July 12, 1927. A form heated to vulcanizing temperature is dipped in latex solution containing an accelerator for sufficient time to vulcanize the film of rubber; then the form is removed from the solution.

77. Loomis and Banks, 1,640,948. Aug. 30, 1927. A layer of a composition including latex, a filler, and sodium silicate, intimately mixed, is applied to a shoe sole; then coagulation of the emulsion takes place *in situ* with consequent adhesion of layer to sole.

78. Kelley, 1,644,730. Oct. 11, 1927. A cement is made from latex containing a reaction product of ammonia and a weak acid obtained by adding to the latex at least 1 per cent by weight of the acid.

79. Westcott, 1,645,635. Oct. 18, 1927. A paving block consists of comminuted tire stock having long threads or cords impregnated with latex.

80. Hays, 1,645,858. Oct. 18, 1927. A doubler for shoes consists of felted cotton fibers compressed into a thin sheet coated on one face with latex.

81. Wescott, 1,646,605. Oct. 25, 1927. The process comprises batting smooth fibers, coating and impregnating them with latex, drying, and during drying alternately producing a slowly reduced atmospheric pressure and quick and rapid restoration of atmospheric pressure.

82. Davis, 1,654,240. Dec. 27, 1927. Layers of rubber for application to surfaces of other material are produced by applying upon the contact face of the rubber layer a solution of rubber; by spraying latex upon the layer of rubber in solution; and by evaporating the moisture from the latex applied, to yield a thin rubber film over the layer of rubber in solution.

83. Owen, 1,656,953. Jan. 24, 1928. A waterproofing compound is made by mixing a filler and aluminum resinate in dry form, dispersing the mixture in a water dispersion of glue, mixing with latex, and adding the product to a water dispersion of light spindle oil.

84. Hopkinson, 1,657,472. Jan. 31, 1928. Materials are bonded together by applying a latex to the surfaces, allowing them to dry, applying rubber cement to the dried surfaces, and bringing them together.

85. Moses, 1,660,204. Feb. 21, 1928. A paper product having high tear-resisting properties is made by impregnating a web of paper with latex, drying, and stretching.

86. Teague, 1,660,213. Feb. 21, 1928. Latex is colored by dissolving an oil soluble dye in a sulphonated oil, emulsifying the solution, and distributing it uniformly through the latex.

87. Hopkinson, 1,660,924. Feb. 28, 1928. Laminated sheet material comprises a facing layer of parallel uncoated cords, a backing bonded by latex, which is applied to the inside face of the cord layer and excluded from the opposite face by the close cords.

88. Hopkinson, 1,661,828. Mar. 6, 1928. Roads, pavements, and floors are surfaced with a composition containing latex vulcanized *in situ*.

89. Magill, 1,664,635. Apr. 3, 1928. Milk bottles with the usual cap are dipped into latex for a perfect seal.

90. Jacobsohn, 1,665,500. Apr. 10, 1928. A gelatine-coated balloon fabric having viscose-rubber latex superimposed, is treated with a plasticizing agent, making the fabric flexible and impermeable to gases.

91. Wescott, 1,668,439. May 1, 1928. An abrasive article composed of granules of abrasive material is bonded together by films of rubber latex containing a small amount of distributed asbestos fiber.

92. Wescott, 1,668,475. May 1, 1928. Abrasive articles are made by mixing abrasive particles with latex, shaping the articles from such mixture, and converting the latex into a rubber bond.

93. Wescott, 1,668,476. May 1, 1928. An abrasive wheel comprises a central reenforcing layer of fabric and lateral faces composed of abrasive grains carrying a coating of intermediate binder and bonded with rubber derived in part from gelled latex; the rubber contains reenforcing fiber.

94. Hansen, 1,668,961. May 8, 1928. A plastic composition comprises paper mill sludge with latex as a binder.

95. Sutton, 1,670,598. May 22, 1928. Patterned surfaces are formed on rubber articles made from latex by partially drying the film of thickened latex and subjecting the film surface to a solvent of softening agent.

96. Wescott, 1,671,914. May 29, 1928. Fibrous material is passed through a latex bath into an acid bath to produce impregnation, skim coating, and distension; then the latex is allowed to coagulate, compressing to remove water, washing to remove soluble impurities, drying to a subnormal moisture content, and compressing the mass.

97. Loomis and Perry, 1,673,573. June 12, 1928. The process comprises interposing a partially coagulated latex in paste form containing vulcanizing ingredients between superposed fabric edges, then pressing and vulcanizing.

98. Teague, 1,673,649. June 12, 1928. Rubber articles are made by disposing a body of latex in a relatively thick layer in the presence of a hydrophilic agent, and drying so that moisture is uniformly withdrawn without forming a dried surface film.

99. Blombery, 1,675,244. June 26, 1928. A paper sheet or board is formed from fibrous stock incorporated with kelp pulp and a proportion of latex, the surface being treated with liquid obtained in macerating kelp, to which latex has been added.

100. Wescott, 1,680,234. Aug. 7, 1928. Plastics containing asbestos are made by extracting asbestos with acid, washing and admixing the extracted asbestos with latex.

101. Cadwell, 1,680,856. Aug. 14, 1928. Inner tubes, gloves, finger cots, bathing caps, and hose are made from vulcanized stable coagulated latex deposited on a porous form. The latex is prepared by treating it with zinc oxide, sodium acetate, and glue, and heating for 48 hours at 150° F.

102. Cadwell, 1,680,858. Aug. 14, 1928. Rubber articles are made from latex by vulcanizing it in the presence of a salt of a thiol acid, and depositing the rubber thus obtained directly on a porous form.

103. Webster, 1,681,891. Aug. 21, 192[illegible] Rubber bonded abrasive articles are made by forming a fluid mixture by agitatin abrasive grain and a solution of rubber together with latex and a vulcanizing agent, shaping the mixture to the form desired, drying and vulcanizing.

104. Loomis, 1,682,530. Aug. 28, 1928. A flooring comprising dried nonvulcanized rubber latex and a filler has a large proportion of its rubber content in and adjacent to one surface.

105. Klein and Healey, 1,683,588. Sept. 4, 1928. The degree of latex coagulation is regulated by adding soft soap in the proportion of 6 to 12 grams to 1 liter of latex, which may be deposited by electrophoresis upon an anodic mold.

106. O'Brien, 1,684,286. Sept. 11, 1928. Silk fabric is weighted with latex.

107. Webster, 1,687,410. Oct. 9, 1928. Rubber bonded abrasive articles are made by mixing latex, a vulcanizing agent and an accelerator, and abrasive grains, coagulating the resulting mixture, and vulcanizing.

108. Biddle, 1,689,008. Oct. 23, 1928. Anti-fouling composition includes a mixture of a poisonous compound of arsenic 20 parts by weight, casein 3 parts by weight, and latex 10 parts by weight.

109. Wescott, 1,689,570. Oct. 30, 1928. Hard rubber articles are made by admixing comminuted hard rubber, disintegrated partially cured rubber, sulphur, fiber, and latex, then drying, molding, and vulcanizing.

110. Small, 1,696,815. Dec. 25, 1928. Leather is finished by buffing it until all but the fine nap is removed, applying latex to lay the nap, allowing the leather to dry, applying a coating without latex, allowing it to dry, and finally placing the leather under pressure between plates at a temperature of from 140° to 180° F.

111. Wescott, 1,702,225. Feb. 12, 1929. Rubber is reenforced by impregnating rubber-containing fibrous scrap with latex, coagulating, drying, and milling.

112. Teague, 1,705,273. Mar. 12, 1929. The process of making a composite rubber surfacing comprises forming a rigid base of plastic material, partly embedding therein, while still plastic, a comminuted binding material, hardening the base, applying thereto a compounded rubber latex containing a sulphonated oil, and curing.

113. Rose, 1,705,537. Mar. 19, 1929. Absorbent paper made from cotton linters is treated with latex.

114. Jacobsohn and Truscott, 1,706,294. Mar. 19, 1929. A balloon fabric is treated with a compound consisting of a mixture of regenerated cellulose and latex redispersed in organic solvents.

115. Klein and Szegvari, 1,708,181. Apr. 9, 1929. Rubber goods are produced

directly from latex by agglomeration of the latex containing dispersed sulphur and vulcanized oil in the form of dispersed particles, each comprising sulphur and vulcanized oil.

116. Haddon and Burnett, 1,710,617. Apr. 23, 1929. Pasted accumulator plates are coated with a mixture of latex and a soluble salt, then dried, and the salt washed out, leaving an elastic and porous structure.

117. Moses, 1,716,654. June 11, 1929. A paper-like product is produced by forming a web of sufficient porosity to absorb latex and also having incorporated therein an element giving sufficient strength to the web, when wet, to prevent tearing, then inpregnating the web with rubber latex.

118. Teague, 1,719,633. July 2, 1929. Rubber articles are made by repeatedly coating a form with latex, coagulating it on the form, washing the form after each coagulation, and subsequently drying the rubber on the form.

119. Ferretti, 1,719,802. July 2, 1929. A leather-like product comprises tanned skin fibers and a latex binder, the fibers being disposed in felted relation.

120. Teague, 1,719,948. July 9, 1929. An adhesive composition comprises latex, emulsified coumarone resin, Karaya gum, and water soluble sulphonated oil.

121. Wescott, 1,720,407. July 9, 1929. A brake liner is composed of a body of gelled rubber derived from latex, the body including asbestos fibers and a wire reenforcement.

122. Blombery, 1,720,716. July 16, 1929. Paper and paper boards are finished by applying to the surface a liquid finishing material including latex, colloidal clay, and other sizing materials.

123. Roman, 1,720,747. July 16, 1929. A waterproofing and flameproofing composition comprises 75 parts ammoniacal latex solution containing about 30 per cent rubber, 300 parts triammonium phosphate solution of about 25 per cent strength, and 1 part ammonium polysulphide.

124. Biddle, 1,722,553. July 30, 1929. An adhesive composition comprises caoutchouc latex, tapioca meal, and lime.

125. Boughton, 1,722,968. July 30, 1929. A resilient flexible sheet for shoe toe-boxes comprises a sheet of cloth impregnated and covered on both sides with a body of rosin cracked into minute sections encased in rubber by dipping into latex.

126. Ruderman, 1,723,581. Aug. 6, 1929. A composition for waterproof and greaseproof paper comprises rubber latex, starch in a gelled state, a soluble metallic polysulphide, an alum solution, formaldehyde, and sodium silicate.

Rubber Trade Inquiries

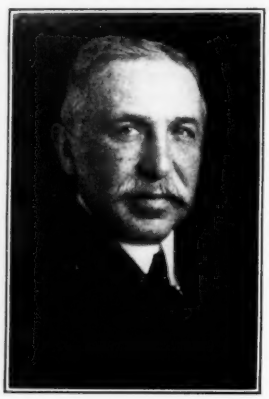
The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

Number	Inquiry
1264	Maker of Bitumen Noflux No. 215.
1265	Manufacturer of Bornic and Luxury sponge rubber products.
1266	Best solution for spraying steel molds to keep rubber from sticking to molds during curing.
1267	Manufacturer of machine used to attach felt strips to channel rubber used in automobile construction.
1268	Manufacturers of Kelly shoe sole calender.
1269	Manufacturer of Vulcatex.
1270	Manufacturer of Benton apparatus for specific gravity of rubber.
1271	Manufacturer of the Air Pillo.
1272	Festooning systems for drying.
1273	Source of supply of gutta percha for use in constructing thermostats.

Obituary

A Pioneer German Rubber Manufacturer

IT IS with regret that we learn of the death on February 14 of Dr. Alfred Calmon, founder and for many years general director of the Asbest-und Gummiwerke, Alfred Calmon, in Hamburg, Germany. The deceased, who had nearly completed his sixty-ninth year, was one of the pioneers of the German rubber and asbestos industry, to the building up and expansion of which he devoted all his powers of mind and energy. In 1886, as a young man of 25, he started his own organization for dealing in technical asbestos and rubber goods. This business was joined to the Allgemeine Elektricitats Gesellschaft, Berlin, Germany, in 1894, when manufacturing was undertaken, and in 1896 the present company was formed, of which Dr. Calmon was general director from 1897 to 1927.



Dr. Alfred Calmon

He was, besides, president of the Wirtschafts-Verein der Deutschen Asbest-Industrie, Berlin; a member of the board of the Reichsverband der Deutschen Kautschuk Industrie and of the head office of the Reichsverband der Deutschen Industrie, etc. From the University of Technology, Breslau, he received the honorary degree of Doctor of Engineering.

Prominent Importer

A WELL-KNOWN importer of raw materials, whose business often took him to many distant lands, has made the long journey from which there is no return. For Adolph Hirsch, president of Adolph Hirsch & Co., Inc., 63 Park Row, New York, N. Y., died at his residence in that city on March 5 after a three-month illness. Funeral services were conducted on March 7 at the Riverside Memorial Chapel by the Rev. Dr. Stephen S. Wise. Burial was in Cypress Hills Cemetery.

Mr. Hirsch was born in New Rochelle, N. Y., on July 18, 1860. His business activities extended over a period of fifty years. He became associated with Abe Stein & Co. as foreign buyer in 1877. In 1888 in Brazil he established the firm of Hirsch & Hess. That same year he founded the Diamond Drill Carbon Co., New York, N. Y., and served as its president for many years. In 1903 he organized the company which proudly bears his name; it has affiliated companies throughout the world.

Adolph Hirsch

He was a member of the New York rubber, cocoa, and hide exchanges, the national metal and raw silk exchanges, the Bahia and United States Chambers of Commerce, the Merchants Association of New York, and the Metropolitan Museum of Art. For eight years, while in Brazil, he was American vice consul at Bahia. He belonged also to the Masonic order. Mr. Hirsch was known, too, for his many philanthropies.

A bachelor, Mr. Hirsch is survived by two sisters, two brothers, and a nephew.

F. A. Lasher

FRANCIS A. LASHER, 46, for many years purchasing agent for the Acme Rubber Manufacturing Co., Trenton, N. J., died at his home in Pennington, N. J., on March 19, after a lingering illness. After resigning from the rubber company he became president and general manager of the H. N. Richards Chemical Co., Trenton. He was a very active member of the Masonic fraternity and also the Order of Mystic Shrine. Survivors are his wife, one daughter, and his mother. Interment was in Trenton.

Gas-Tight Balloon Cloth

A fabric material through which gases are said to be practically non-diffusible, which may enable balloon builders to dispense with gold-beaters' skin as a lining, is prepared by treating one or both sides of standard balloon cloth with a water-insoluble weatherproofing substance, either rubber or a cellulose derivative, and then coating the untreated side with a gas-sealing composition, either gelatin or casein, mixed with glycerol.

Editor's Book Table

Book Reviews

Latex, Its Occurrence, Collection, Properties, and Technical Applications. By Ernst A. Hauser, Ph.D., with patent review compiled by Carl Boehm Von Boernegg, Ph.D. Translated by W. J. Kelly, Ph.D. Book Dept., The Chemical Catalog Co., Inc., 419 Fourth Ave., New York, N. Y. 1930. Cloth, 201 pages, 6 by 9 inches. Indexed, illustrated.

Dr. Hauser, who is recognized as an outstanding authority on rubber latex, has assembled in this volume a general review of the known facts regarding Hevea latex and of the less important gutta percha and balata trees.

Following an historical introduction, the author discusses latex collection, its physical and chemical properties, non-rubber constituents, coagulation, and preparation of "whole latex rubber." The technology of latex is treated at length, dealing with its preservation, shipment, concentration, vulcanization, and industrial application. The concluding chapter is a treatise on the internal structure of rubber based on the researches of many scientists who have studied that problem.

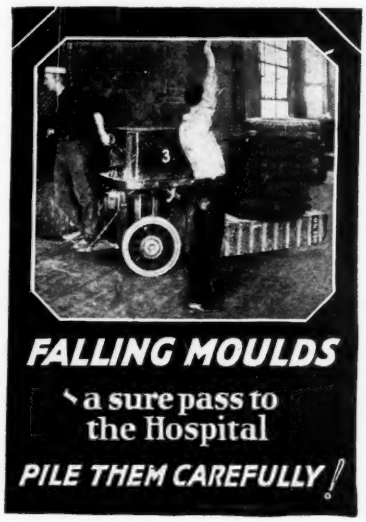
An appendix of English and German patent literature arranged chronologically from 1791 to 1927 completes the volume. The book contains author and subject indices, and throughout is replete with references to scientific and technical literature. The author has been successful in his attempt to fill a distinct need on the part of rubber chemists and technologists for a monograph on rubber latex.

"Handbuch der Kautschukwissenschaft." In collaboration: By Prof L. Hock, University of Giessen; Dr. E. Kindscher, Division Manager, State Bureau for Testing Materials; Dr. A. Koch, I. G. Farbenindustrie A. G.; Dr. H. Pohle, formerly chemist of Continental Caoutchouc und-Gutta Percha Co., Hannover; Dr. R. Pummerer, Director of the Chemical Laboratory, University of Erlangen; Prof. A. Schob, Division Manager, State Bureau for Testing Materials; Dr. A. Zimmermann, formerly director of the Imperial Institute of Biology and Agriculture, Amani, German East Africa. Edited by Prof. K. Memmler, Director, State Bureau for Testing Materials. Published by S. Hirzel, Leipzig, Cl., Germany. Cloth, 790 pages, large 8°, 246 illustrations, including 10 plates, in black and colors.

This imposing volume represents the first attempt at a comprehensive work embracing the entire field of rubber science and giving an accurate survey of the present state of research, knowledge, and experience in all its branches. Besides an introduction, the book is divided into seven parts, each part from the hand of an expert in the particular field covered. Part 1. Dr. A. Zimmermann. A history of crude rubber including the botany, production, cultivation, and preparation of rubber; individual characteristics of rubber particles in various plants; direct use of latex, liquid or concentrated; coagulation and preparation of latex; effect of storage on rubber. Part 2. Drs. R. Pummerer and A. Koch. Chemistry and synthesis of rubber, vulcanization, accelerators, Peachey process, vulcanization with nitro combinations and peroxides, with selenium, selenium chloride and sulphur rhodanide. Parts 3 and 4. Prof. Kindscher. Physical vulcanization and chemical analytical methods. Part 5. Prof. L. Hock. Physics of rubber. Part 6. Profs. K. Memmler and A. Schob. Mechanical testing methods, covering determination of plasticity, apparatus employed, aging tests, testing of rubberized materials, insulated wires, hard rubber. Part 7. Dr. H. Pohle. Technical vulcanizates via the microscope. Not a little is added to the value of this important work by the very large number of fine illustrations in black and in colors which accompany the text.

U. S. Heel Production

Year	Pairs
1927	201,013,523
1928	235,170,832
1929	232,126,750



New Publications

"Crude Rubber" is the title of a pocket-size pamphlet of 35 pages issued by H. Hentz & Co., Hanover Square, New York, N. Y. It contains brief sketches of the salient points relating to rubber production and the rubber futures market. The contents consist mostly of pertinent statistics and data on production, consumption, prices, etc., supplemented by statistics on automobile production and gasoline consumption.

"Brighter and Whiter," an eight-page booklet issued by the Anaconda Zinc Oxide Department, briefly describes the four grades of French Process Zinc Oxide manufactured by that department of International Lead Refining Co., East Chicago, Ind. The grades referred to are "Pharmaceutical" U. S. P., White Seal, Green Seal, and Red Seal. They run in the order named as to their purity. The latter three grades are particularly suited for rubber compounding on account of their quality.

Rubber Possibility in New Guise

Scarcely twenty years ago the common milkweed, *Asclepias syrica,* was much discussed as a potential source of American rubber, just as is today the goldenrod on which Thomas A. Edison has been bestowing much attention. Saunders in 1875 had reported the presence of caoutchouc in the latex of the milkweed, and for a long time it was believed that the rubber in the milky juice could be extracted and utilized in a practicable way. The cultivation of the weed on a commercial scale was reviewed thoroughly by Fox in an article on "Growing Rubber in Ohio" in the INDIA RUBBER WORLD, September, 1914, p. 645; and as the conclusion was reached that there was nothing in the project, the latter was abandoned. Now the milkweed is getting attention from a non-rubber quarter. The cellulose industries, looking to annual plants to supply much of their needs, see attractive prospects in the former rubber possibility, the weed having been propagated to show an acre yield of 30 bushels of seed, 280 pounds of floss, and a ton of air-dried stems.

IT IS SAID THAT THE FLOORS OF THE projected Palace for the League of Nations at Geneva will probably be covered with rubber. Surely if any institution were to be quieted, it should be the stately structure dedicated to perpetual peace. Aside from sentiment, the rubber industry would have so much to gain in prestige by the installation of such floor covering in so important an edifice that it would be profitable to provide it at little more than cost.

EDITORIALS

"When We Two Go A-Maying"

UNABLE to check tapping on 52 Sundays, the British and Dutch rubber growers are debating about trying the 31 days of May for a yearly let-up. The immediate effect of such voluntary restraint should be to lower crude rubber stocks and to stiffen prices, but what of the future? Plantations may be fairly controlled, but to what degree will native production be effectively repressed? The Stevenson Act checked output in British-controlled territory, but its indirect effect was to spur native production in a surprising manner; and even now native growing appears to be even a greater factor in Malaya than in Netherland India, where its importance had long been recognized. With the active cooperation of the natives the plan might be a big success, even become formidable.

Of course, assurance is given that "the high contracting parties" will make as much effort to keep prices within proper bounds as to keep world stocks from mounting. But is there any agency so strong as to avert a swing to either extreme? Even the sponsors for the powerful restriction scheme were at last forced to admit that they had not reckoned adequately with such potent factors as native growing, reclaimed rubber, better compounding, and buyers' pools.

The tapping cessation is but a restful experiment, it is explained, and not to be understood as setting a precedent. Still many consumers are likely to regard this move as but the precursor of a regulation more drastic. At any rate they will probably see little that is idyllic in the spectacle of two great rival producing interests, hand in hand, gathering posies instead of latex in Maytime.

* * *

Not All Chase Will-o'-the-Wisps

A VERY practical rubber chemist, impatient of the stress put on the more theoretical of the industry's problems, says that many of the abstruse essays remind him of an experience with a too-zealous young assistant, who, so much impressed with X-ray spectroscopic and other investigations into the ultimate constitution of matter, urged that the laboratory should concern itself quite as much with ultra-microscopical as chemical problems.

"Why," said he, "as the sulphur atom has a positive proton and six electrons, the first only a positive and the latter negative charges of electricity, should we not be able to add or subtract an electron and make sulphur so active as to need no accelerator? In fact, if an atom be only two kinds of electrical charges, all that we buy evidently has no material existence at all?"

The chemist said that when he asked how the electrons could be economically shifted, or the purchasing agent persuaded that he was buying only force instead of matter, the tyro subsided and later he became a very useful aide.

Much as the rubber industry may prize its practical men, it can never afford to discourage its theorists. They have well won the high place accorded them, and even though they may sometimes follow fatuous leads, the hope persists that from among them will yet come a Moses who will lead the industry into a real Land of Promise.

* * *

U. S. Rubber's Report Cheering

THAT such a major figure in the industry as the United States Rubber Co. should have been able to reduce a 1928 deficit of $10,781,000 to $3,378,412 in 1929 is encouraging. The new management might have temporized with the unsatisfactory condition that confronted it when it took the reins, but instead it bravely took the bull by the horns; and by centralizing operations, lopping off much deadwood, and making radical changes in production and distribution methods, it has put the great concern in a sounder position than it has been in many years and has thrust it well forward toward its proper profit-making sphere. Its courageous course should inspire other directorates that have been faltering about putting their houses in order; as it should also hearten share-buyers who provide the sinews of war, but who, because of many faulty conditions, notably excess output and ruinous competitive practices, have of late been rather chary about chancing much of their funds in rubber manufacturing enterprises.

* * *

Admires American Cooperation

THE universal courtesy and helpful spirit prevailing among American rubber manufacturers elicits warm praise from R. T. Byrne, managing director of the Leyland & Birmingham Rubber Co., Ltd., England. One of the chief faults of the British system, he says, is the tendency toward individualism, which shies at friendly cooperation with rivals in the same field. He comments on this attitude thus:

"What can only be called insular prejudice has prevented the growth of confidence between one firm and another; and want of confidence is the invariable breeder of a kind of suspicion which creates an atmosphere in the trade woefully inimical to mutual consultation and conference on trade problems common to all. The American firm will give information and even assistance to a competitor in return for a *quid pro quo*, sometimes even without it."

What the Rubber Chemists Are Doing

A. C. S. Rubber Division Meetings

THE spring meeting of the American Chemical Society, Rubber Division, will be held at the Atlanta-Biltmore Hotel, Atlanta, Ga., April 7 to 12. The divisional program is scheduled for April 9 and 10. At these sessions eighteen papers will be presented, which record research results of great interest and importance in both the chemistry and technology of rubber. Abstracts of all these papers are printed below. In addition, the Physical Testing Committee will present a report.

The customary banquet, in charge of O. M. Hayden, will be held on Wednesday evening at the Atlanta-Biltmore Hotel, the headquarters of the Rubber Division.

Abstracts of Papers

Autographic Stress-Strain Curves of Rubber at Low Elongations. After a brief discussion of present methods of obtaining stress-strain curves on dumbbell and ring test pieces a new method is described based on a new form of test piece. The new test piece is a molded loop 10 inches long and ¼- by ¼-inch in cross-section, which has the following advantages: (a) The cross section is about 6 times that of ordinary test pieces and therefore gives more accurate readings, particularly at low elongations; (b) since each loop is molded, no subsequent cutting is required; (c) flaws in the test piece are of no consequence; (d) every part of the test piece is stretching at a constant speed throughout the entire test. Stress-strain curves are given for a pure gum and carbon black stocks showing the effect of the following factors: (a) increasing cure, (b) speed of testing machine, (c) mill grain, (d) flaws in test piece, (e) humidity, (f) temperature, (g) increasing loading of carbon black. A. A. Somerville, J. M. Ball, and L. A. Edland.

Structural Changes During Processing of Rubber. The effect of mastication, heating in air, in oxygen, in steam, and in carbon dioxide gas, as well as the influence of light upon the plasticity of crude rubber has been investigated. Cold milling causes a permanent change in the consistency of crude rubber, whereas heating in air or in steam produces a more or less temporary effect. In absence of air it seems that the rubber exhibits a maximum amount of disaggregation at each given temperature. At low temperatures the increase in plasticity proceeds with practically the same rate whether the rubber is heated in oxygen or in carbon dioxide. Ultra-violet light affects concurrently both the plastic and elastic properties of the rubber. The correlation between elasticity and double refraction of crude rubber has been shown. The anisotropic properties of rubber parallel the recovery values. In this investigation no agencies have been met with which cause as far-reaching and profound destruction of the elastic properties of the rubber as prolonged physical mastication. The interrelation between plasticity and structure of crude rubber has been studied and the fundamental difference between actual mastication and heat break-down has been emphasized. Prolonged milling, heating in air, or in oxygen destroys the protein framework of the rubber. Heating in steam or in an inert gas leaves it more or less intact. Ernst A. Grenquist.

Thermochemistry of Vulcanization of Rubber. The heat of vulcanization of rubber by sulphur has been carefully determined over the complete range of combination. The formation of hard rubber is a strongly exorthermic reaction, while the formation of soft vulcanized rubber is apparently without heat interchange, even in the presence of an accelerator. The vulcanization of rubber with m-dinitrobenzene and selenium is also without heat interchange, and only soft vulcanized rubber is formed. John T. Blake.

Kinetics of Vulcanization of Rubber with Sulphur and Selenium. A method for the determination of combined selenium in rubber has been evolved and a study made of the kinetics of the vulcanization of rubber with selenium. The formation of hard rubber under chosen experimental conditions has been put on a mathematical basis and has been shown to follow the bimolecular reaction equation. The formation of soft vulcanized rubber and ebonite has been shown qualitatively to be successive reactions. The action of accelerators during vulcanization has been discussed. John T. Blake.

Vulcanization of Rubber With Nitro Compounds. A kinetic study has been made of the vulcanization of rubber with m-dinitrobenzene and trinitrobenzene. The vulcanization has been shown to be a chemical reaction and to follow the monomolecular equation. A discussion of the molecular weight of rubber as estimated by stoichiometric methods is given. Nitro compounds are apparently incapable of vulcanizing rubber to form ebonite. The mechanism of vulcanization of rubber with m-dinitrobenzene is discussed. John T. Blake.

A Theory of Vulcanization of Rubber. A new theory is advanced which, it is believed, explains completely the various phenomena connected with the vulcanization of rubber. It is entirely a chemical theory based on the fact that two separate and distinct rubber compounds exist—soft vulcanized rubber and ebonite. The theory explains satisfactorily the aging of rubber, the variation in combined sulphur at optimum cure caused by acceleration, the kinetics of vulcanization, the characteristics of various vulcanizing agents, and the thermochemistry of vulcanization. C. R. Boggs and J. T. Blake.

The Surface Application of Age Resisters to Cured Rubber vs. Mill Incorporation Prior to Cure. The protection afforded against accelerated aging was determined by applying representative hydrocarbons, organic acids, aldehyde amines, phenols, primary amines, alkaryl amines, diaryl amines, and thiazines to a second-grade tread stock. A comparison of surface application vs. mill incorporation was made in a high-grade non-blooming tread, a high zinc blooming tread, a white mechanical stock, and a pure gum stock. Efficient protection may be secured by either method; however, for high black stocks mill incorporation seems to give best results. It was shown that surface application will retard further deterioration even after considerable deterioration has occurred. W. L. Semon, A. W. Sloan, and David Craig.

Early Stages of Oxidation in Rubber —A Quantitative Application of the Pyrrole Test. The pine splint-hydrochloric acid test for oxidation products of rubber has been developed quantitatively. The technic and special apparatus are fully described. Data from application of the test to a wide range of commercial stocks are given. Its use in following early stages of oxidation as they occur in accelerated aging of vulcanized rubber is described, and attention is called to an apparent difference between oxygen aging and heat aging. Evidence is cited that the substance which gives the test (presumably laevulinic aldehyde) is formed independently of and previous to the actual physical deterioration of the rubber. J. W. Temple, Sidney M. Cadwell, and Morris W. Mead, Jr.

The Solubility of Oxygen in Rubber and Its Effect on the Rate of Oxidation. The solubility of oxygen in rubber follows Henry's law and decreases with in-

creasing temperature. The oxidation of rubber proceeds at a uniform rate as long as the oxygen concentration remains above a certain minimum. The concentration of oxygen in rubber exposed to air at 70° C. is less than that required to produce uniform oxidation at a maximum rate. High temperature appears to produce a type of oxidation which is affected by high pressure. The simultaneous use of high temperature and high pressure should be avoided. Ira Williams and Arthur M. Neal.

3-Methyl-1,3-Pentadiene. A new set of reactions is given for preparing 3-methyl-1,3-pentadiene. Ethyl-methylketone and acetaldehyde are aldoled to form 3-methyl-4-hydroxy-2-pentanone. This keto-alcohol is then catalytically hydrogenated to the corresponding glycol, which on being dehydrated forms the 1,3-diene. No 1,2-diene can form during the dehydration. Attempts to polymerize the 1,3-diene to a rubber-like product were unsuccessful. Therefore, the polymerization of 1,3-dienes to rubber-like products does not depend solely on the presence of a vinyl group. Harry L. Fisher and F. D. Chittenden.

Some Aspects of Double Refraction and Structure in Rubber. Both soluble and insoluble hydrocarbon phases may exhibit optical anisotropy upon distortion. Stretch is looked upon as involving a two-phase mechanism wherein the soluble phase is forced into an orientation position within the gel phase, and optical homogeneity results. Double refraction of both stretched and compressed rubber is interpreted as that of oriented rod-like micelles. Photographs of double refraction figures of compressed rubber are included. B. W. Rowland.

The Effect of Curing Temperature Upon the Properties of a Rubber-Sulphur Mix. Data are presented covering a range of equivalent cures at six different temperatures on a stock consisting of rubber 100, sulphur 6.25. Neither the original properties nor the aging behavior show any definite trend with increase of curing temperature. Comparison is made of natural aging to artificial aging as conducted in the Geer oven and the Bierer and Davis bomb. **The temperature coefficient of vulcanization** is determined by three methods and found to be 2.50/10° C. or 1.64/10° F. C. R. Park.

The Moisture Content of Crude Rubber and Its Effect on Modulus of Cured Stock. The moisture content of crude rubber has been divided into two classes, free and combined. A method of determination has been developed and the free and combined moisture has been determined on fifteen different samples of crude rubber. The different rubbers were compounded in two test formulas and the results correlated with the results of the moisture determinations. The following conclusions were drawn from the work: (1) Total moisture and free moisture as determined according to the method given do not have any connection with the physical or curing properties. (2) There seems to be a definite trend in the relationship of combined moisture and modulus in the case of one formula. (3) The correlation is not exact enough to warrant use in selecting rubbers. S. C. Nicol.

Application of the Falling Cylinder to the Measurement of the Viscosity of Thick Rubber Cements. The fall of cylinders through the surface of many thick cements may be represented with reasonable accuracy by the equation:

$$t = k \frac{x^3}{W^n}\left[1 + \frac{2n}{3}\frac{ax}{W} + \frac{n(n+1)}{4}\frac{(ax)^2}{W} + \frac{n(n+1)(n+2)}{15}\frac{(ax)^3}{W} + - -\right]$$

where t is the time of fall, x is the length of cylinder submerged, W is the weight of cylinder, a is the buoyant force on the cylinder when immersed 1 cm., and n and k depend on the flowing properties of the cement, k also being a function of the radii of the falling cylinder and the container. This equation was tested with cylinders varying from .0487 to 1.32 cm. in diameter, using liquids giving a 130-fold range in the time of fall. It held for castor oil and cements made of milled rubber, but not for thick cements made of unmilled rubber. A 15 per cent suspension of clay in oil acted very differently from rubber cements, as it showed a definite yield value and anomalous turbulence. Falling cylinder viscometers were constructed of steel, and simplified formulas were derived for factory use. They were found very satisfactory for control and development work on many thick cements, and they could be used for control work with materials for which the above equation was not valid. These instruments are simple and easy to use, and should be of value in testing a wide variety of materials. W. F. Busse and W. B. Doggett.

A Method of Making Micro Sections of Rubber Stocks. This method has been developed to satisfy the need for a quick and convenient method of making thin sections of rubber stocks. A barely visible piece of rubber stock is cut with dissecting scissors and squeezed between a microscope slide and cover glass in a pool of molten beeswax or rosin. Held until the wax hardens, the rubber section is retained permanently thin. By this method, sections as thin as one micron or less can be made even of stiff rubber compounds containing 25 to 30 per cent of gas black. Sections may be made of either cured or uncured stocks. Some applications of the method are mentioned. Illustrations show the method of preparing the sections. Six typical rubber pigments are shown dispersed in rubber stocks from which the sections have been prepared by this method. Several autochromes show interesting colored pigments. Among the latter is a slide showing the brown color of a thin section of a channel gas black stock. Raymond P. Allen.

The Behavior of Various Clays in Crude and Reclaimed Rubber. The maximum and minimum variations produced by a large number of commercial clays in crude and reclaimed rubber have been determined. Their effect on both the uncured and the cured products have been studied. The chemical analysis gives but little information regarding their behavior in crude or reclaimed rubber. Clays show wide variation in plasticity, retentivity, and softness in crude and reclaimed rubber. They vary widely in their effect on the physical properties of crude and reclaimed rubber. Bomb aging is an important test for differentiating between various clays. In comparing samples of clays it is desirable to note their effect on the uncured as well as the cured properties of a compound. H. A. Winkelmann and E. G. Croakman.

Carbon Black in Rubber Insulating Compounds. Rubber is a non-conductor or dielectric. Carbon black consists mostly of carbon, which is a conductor and so not a dielectric. Therefore the addition of the latter to the former must detract from its dielectric properties; thus current belief, and thus the literature. The contrary is the case. The admixture in suitable proportions of carbon black to rubber insulating compounds not only does not injure but may improve them, and to a striking extent. W. B. Wiegand and C. R. Boggs.

The Effect of Pigmentation on the Work of Retraction of Rubber Compounds. The work of extension of rubber compounds has been defined as the work done during the elongation of the compound, and the work of retraction has been defined as the work done by the rubber in returning from a stressed position to the point of zero stress. Work of extension is influenced by the kind and amount of pigment used, but the data show that work of retraction is independent of either of these factors. It is influenced, however, by the state of cure of the rubber. F. S. Conover.

Chicago Group

A most interesting dinner-meeting was held on the evening of March 21, at Maillards, Chicago, Ill., where "Milling and Mixing" was discussed. The attendance numbered 115, the largest for the year.

C. F. Schnuck, division engineer of the Farrel-Birmingham Co., Inc., Ansonia, Conn., presented a paper on mills and Banbury mixers. He discussed in minute detail the present-day construction of roll mills and the best method of delivering cooling water to the internal surface. Mr. Schnuck considered also the mechanics of breaking down rubber and mixing in compounding materials and the losses due to mechanical friction. His explanation of the action of the Banbury mixer was understandable to everyone, and the economies resulting by their use are surprisingly large.

H. A. Depew, of the research laboratories of the New Jersey Zinc Co., Palmerton, Pa., read a paper on "The Behavior of the Pigments During Mixing and Curing." Dr. Depew gave a very practical talk on milling, and traced the changes in the pigments and the rubber during the operation of milling and mixing. He illustrated his paper by numerous lantern slides, and traced the changes not only during mixing but also during vulcanization.

The discussion which followed showed that the whole subject is of great interest and exceedingly practical value. Many points were brought out in the discussion which ordinarily are not talked about so frankly.

A surprise feature of the evening was the appearance of the Disperso Boys, black-face songsters who made things lively during the dinner hour and were called back repeatedly for encores. Their presence was made possible by the courtesy of the Century Carbon Co. Division of Wishnick-Tumpeer, Inc., Chicago, Ill.

Los Angeles Group

A joint meeting and dinner of the Southern California Section and the Los Angeles Group of the Rubber Division, A. C. S., was held on the evening of February 26, 1930, at the Engineers Club, Los Angeles, Calif.

Harrison E. Howe, editor of *Industrial and Engineering Chemistry*, the guest of honor, delivered a very excellent address on "Alcohols New and Old." The members who attended were well repaid by the very comprehensive and interesting survey of the subject made by Dr. Howe.

New York Group

The New York Group, A. C. S., Rubber Division, held a dinner-meeting at 6:00 P. M., on March 28, 1930, in the Town Hall Club, 123 W. 43rd St., New York, N. Y.

The two basic materials employed in the rubber industry were ably treated by three speakers of outstanding authority. Their contributions to the program were as follows: "Getting Better Acquainted with the Stretch Property of Cotton" by B. H. Foster, Textile Division, United States Rubber Co., New York, N. Y.; "Crude Rubber Statistics" by E. G. Holt, Chief of Rubber Division, U. S. Department of Commerce, Washington, D. C.

Jas. W. Cox, a well-known textile engineer, gave a very informative address on cotton fibers and textiles with special reference to tire fabrics.

The meeting was well attended and the general discussion that followed reading of the papers brought out many informing points of interest.

Abstracts of Papers

Crude Rubber Statistics. The author outlines the scope of the statistics necessary to be covered in a comprehensive survey, stating that the following items should be included: namely, the acreage planted annually in each producing country, records of annual production and exports, records of stocks held by producers and dealers in rubber producing countries, stocks afloat on the high seas between producing and manufacturing countries, reexports from manufacturing countries, and consumption and stocks in manufacturing countries. Records of reclaimed rubber consumption, automobile tire production, automobile production, gasoline consumption, automobile registration, etc., are useful to the crude rubber statistician.

The history of rubber statistics is considered historically as follows: 1, the prerestriction period, covering the interval from the earliest records of the trade in rubber to 1919-20; 2, the restriction period 1920-28; 3, the free trade period since 1928. The last is marked by constantly increasing trustworthiness. Current statistics indicate a growth in world production from about 790,000 tons in 1929 to over 1,200,000 tons in 1935. The need is stressed for the extension of officially collected and published government statistics, also of regular monthly reliable figures of consumption of rubber in England, France, and Germany. How to use statistics was discussed with relation to determining monthly trends of production, stocks, rate of consumption, etc. The present rubber situation and probability of future rapid growth is indicated. E. G. Holt.

Getting Better Acquainted with the Stretch Property of Cotton. This paper reports investigations, mostly original, conducted at the United States Co. rubber textile laboratory for studying the characteristics of cotton stretch property. It is shown that stretch increases as humidity increases; that atmospheric conditions to which material is exposed just previous to bone drying have marked effect on bone dry stretch measurement, a point likely to be overlooked in the testing room; and that material in transit or in storage, if exposed to alternate dry and rainy weather conditions, will show an increase in stretch. An apparatus is shown for measuring the amount of shrinkage of cotton when immersed in water, and also the amount of tension set up by shrinkage. Other apparatus is described, which shows the effect that difference in stretch between two plies of fabric has on the strength. The results are that the greater the difference in stretch, the greater the loss in resultant strength. Still another apparatus makes it possible to measure stretch of tire cord continuously over long lengths and at varying loads. The results of stretch measurements of a low and a high stretch cord are shown. The investigations recounted show that: Moisture plays an important role with the stretch property of cotton; Difference in stretch between two plies of fabric greatly reduces the resultant strength; An apparatus having greater precision to measure the amount and uniformity of stretch under varying loads is needed. B. H. Foster

Anaconda Zinc Oxides

The following new line of zinc oxides, adapted for rubber compounding, has recently been announced.

Pharmaceutical zinc oxide (U. S. P.) is manufactured by a modification of the French process from selected electrolytic zinc. It is exceedingly white, fluffy, and fine, and of exceptional purity.

White Seal oxide is also made from electrolytic zinc, and, while it does not have the guaranteed purity of the pharmaceutical grade, it possesses exceptional brightness and whiteness. In rubber work it is well suited for use in highest grade surgical rubber goods.

Green Seal oxide does not differ radically in chemical composition from White Seal. By comparison, however, it is equal to it in color and superior in brightness. Denseness and lower bulking power are its chief differences as compared with White Seal. Green Seal is favored for many lines of rubber sundries.

Red Seal oxide is the lowest grade of the French process oxides. It is not so high in chemical purity or so good in color as either the Green or the White Seal. It is, however, much superior to selected and lead free grades with respect to color and chemical composition. Red Seal is used for automobile tires and mechanical rubber goods compositions when economic conditions do not warrant the use of a higher grade zinc oxide.

The Chemistry of Rubber

The "Chemistry of Rubber" by Dr. Harry L. Fisher, published in the March issue of *Chemical Reviews*, is virtually a complete textbook on the subject, suitable for college study and reference for the research chemist. The author handles the subject in four sections: latex, the rubber hydrocarbon, chemical reactions and derivatives, references to the literature of rubber chemistry and research.

A New Rubberized Plastic

A rubberized plastic composition, said to have many uses, is formed by oxidizing gasoline with nitric acid or sodium peroxide, after which it is neutralized, distilled with rosin (colophony), and treated with aqueous alkali. After standing, the mass is primed with rubber, melted, and precipitated with a suitable agent and may then be molded and vulcanized under heat and pressure.

Rubber Bibliography

PRESERVATION OF RUBBER. Action of Reducing Agents. Gustave Bernstein, *Mon. Prod. Chim.*, 11, No. 110, pp. 1-4; *Chem. Zentr.*, 1928, 11, p. 819.

AGING OF RUBBER. J. Lagerquist, *Tek. Tid. Uppl. C.*, 59, pp. 34-40 (1929).

PERMEABILITY OF RUBBER TO AIR. I, Effect of Temperature, Pressure, and Humidity. V. N. Morris and J. N. Street. *Ind. Eng. Chem.*, 21, pp. 1215-19 (1929).

PREPARATION OF RECLAIMED RUBBER WITH SOY-BEAN OIL. Yoshihide Kakimoto. *Repts. Imp. Ind. Research Inst., Osaka, Japan*, 19, No. 9, (1929).

VULCANIZATION ACCELERATORS OF THE MERCAPTO-BENZO-THIAZOLE SERIES. J. Altpeter, *Metallbörse*, 19, pp. 2583, 2639 (1929).

RATIONAL UTILIZATION OF SCRAP AND RECLAIMED RUBBER. Manufacture of Hose. H. Baufaron, *Déchets et Régénérés*, 1, No. 5, pp. 3-5 (1929).

MANUFACTURE OF RUBBER ROLLS. H. L. Füllsack, *Gummi-Ztg.*, 44, pp. 634, 636-37 (1929).

SUGGESTION FOR STANDARDIZATION FOR RUBBERIZED FABRICS, PARTICULARLY WEARING APPAREL (MANTLING). Anon., *Gummi-Ztg.*, 44, p. 637 (1929); Reply, Werner Esch, *Ibid.*, pp. 637-38; Further comments, Ernst Adel, *Ibid.*, pp. 638, 640.

ATTEMPT AT A RATIONAL CLASSIFICATION OF THE PRINCIPAL ACCELERATORS OF VULCANIZATION. II, Study of the Time Required for Vulcanization to Give the Maximum Physical Properties at Different Temperatures. R. Thiollet and G. Martin. *Caoutchouc & gutta-percha*, 26, pp. 14722-30 (1929).

CRYOSCOPIC MEASUREMENTS ON RUBBER SOLUTIONS AND THE SEPARATION OF MIXED PHASES FROM BENZENE SOLUTIONS OF RUBBER. IX. Rudolf Pummerer, Albrecht Andriessen, and Wolfgang Gündel, *Ber.*, 62B, 2628-36 (1929).

HENTRIACONTENE. Rudolf Pummerer and Herbert Kranz, *Ber.*, 62B, 2620-28 (1929).

IODINE NUMBERS AND OXYGEN NUMBERS OF SOL AND GEL RUBBER. X. Rudolf Pummerer and Franz Josef Mann, *Ber.*, 62B, 2636-47 (1929).

STRUCTURE OF ORGANIC MATERIALS OF HIGH MOLECULAR WEIGHT INTERPRETED ACCORDING TO KEKULÉ'S THEORY. H. Staudinger, *Helv. Chim. Acta*, 12, 1183-97 (1929).

INTERFACIAL ENERGY BETWEEN RUBBER AND FILLING MATERIAL. F. Hartner, *Kolloidchem. Beihefte*, 1929, 30, 83-108.

CHEMISTRY OF RUBBER. Harry L. Fisher, *Chem. Reviews*, Mar., 1930, pp. 51-138.

TOXIC SUBSTANCES IN THE RUBBER INDUSTRY. Part VIII, Chromium and Its Compounds. P. A. Davis, *Rubber Age* (N. Y.), Feb. 25, 1930, pp. 541-42.

ACCELERATORS OF VULCANIZATION AND THEIR USES. Friedrich Emden, Translation by J. P. Fahy, *Rubber Age* (N. Y.), Mar. 10, 1930, pp. 599-603.

ORGANIC ACCELERATORS. II. Fred Grove-Palmer, *Rubber Age* (London), Mar., 1930, pp. 17-18.

MEASUREMENT OF THE P_H VALUE OF RUBBER LATEX. J. G. Mackay, *India Rubber J.*, Mar. 8, 1930, p. 353.

RISKS OF THE RUBBER WORKER AND THEIR PREVENTION. W. G. Martin, *Inst. Rubber Ind.*, Dec., 1929, pp. 235-46.

APPLICATION OF ELECTRICITY TO THE RUBBER INDUSTRY. Fredk. Walker, *Inst. Rubber Ind.*, Dec., 1929, pp. 247-62.

SOME PROPERTIES OF CARBON BLACK. D. Parkinson, *Inst. Rubber Ind.*, Dec., 1929, pp. 263-83.

MACHINE TESTING OF PNEUMATIC COVERS. L. J. Mountford, *Inst. Rubber Ind.*, Dec., 1929, pp. 284-90.

EXPERIMENTS ON THE CAUSES OF THE DETERIORATION OF EBONITE WHEN EXPOSED TO LIGHT AND AIR. D. M. Webster and B. D. Porritt, *India Rubber J.*, Feb. 15, 1930, pp. 239-43.

SEAMLESS RUBBER ARTICLES. Thos. W. Fazakerley, *India Rubber J.*, Mar. 1, 1930, pp. 309-10.

SHORT COMPARISON OF WHITE FILLERS, WITH SPECIAL REFERENCE TO PIGMENTATION. T. R. Dawson, *Ind. Rubber J.*, Mar. 1, 1930, pp. 315-16.

IDENTIFICATION AND DETERMINATION OF THE YELLOW PIGMENT OF RAW RUBBER. B. J. Eaton and R. G. Fullerton, *J. Rubber Res. Inst. Malaya*, 1929, 1, pp. 135-48.

COMBATING OIDIUM ON HEVEA BY DUSTING SULPHUR FROM AIRPLANES. T. A. Tengwall, *Arch. Rubbercultuur*, Jan., 1930, pp. 1-8. Tables. English version, pp. 9-14.

MODERN METHODS OF ASCERTAINING SPECIFIC GRAVITY. W. A. Benton, *Chemistry Industry*, Nov. 20, 1929, pp. 1145-52.

Twenty Years Bring Vastly Improved Tire

Two decades have wrought great changes in motor-cars. They have brought just as radical changes and improvements in automobile tires, as may be seen from the following, released by The General Tire & Rubber Co., Akron, O.

In 1910 John Kehrer, of Bucyrus, O., constructed his own home-made car and equipped it with regulation quick detachable tires, then standard equipment for automobiles. The diameter of this tire was 43 inches or nearly twice that of the average passenger-car tire today. Its cross-section was 5 inches in diameter or much less than the present average cross-section of balloon tires.

In 18 months Mr. Kehrer ran his car 2,700 miles, when the tires, which were made of rubber on ordinary fabric, were entirely worn out. The spare tire, which was not used and survived the car itself, is now owned by Charles Carmine, of Bucyrus.

While the 1910 tires were through after 2,700 miles, the General dual 8 has frequently given 65,000 or more miles of safe, comfortable service and can be depended upon for at least 50,000 miles.

INVESTIGATIONS OF OIDIUM OF HEVEA BRASILIENSIS. W. Bobilioff. *Arch. Rubbercultuur*, Jan., 1930, pp. 15-49. Tables, diagrams. English summary, pp. 50-51.

RESULTS OF RUBBER STATISTICS FOR 1927. II. Connection between Planting Distance and Rubber Production. T. A. Tengwall, *Arch. Rubbercultuur*, Jan., 1930, pp. 52-58. English version, 59-62. Tables.

TECHNOLOGY OF LATEX. Aladin, *Gummi-Ztg.*, Jan. 31, 1930, pp. 945-46; Feb. 7, pp. 993-94.

RUBBER FLOORS COMPARED WITH OTHER FLOOR TYPES. Fred Joachim Schoeps, *Gummi-Ztg.*, Feb. 14, 1930, pp. 1044-46. Table.

STEARINE AS RAW MATERIAL IN THE RUBBER INDUSTRY. Ernst Schlenker, *Gummi-Ztg.*, Feb. 14, 1930, pp. 1048-49.

DETERMINATION OF THE THICKNESS OF CABLE COVERS. St. Reiner, *Gummi-Ztg.*, Feb. 21, 1930, p. 1100.

SOME COMPARISONS BETWEEN THE EFFECTS OF SINGLE, DOUBLE, AND TREBLE SHIFTS ON THE FATIGUE OF WORKERS. H. M. Vernon, *Inst. Rubber Ind.*, Dec., 1929, pp. 228-34.

RUBBER FOR SUBMARINE CABLES. P. Schidrowitz, *India Rubber J.*, Nov. 23, 1929, pp. 799-80.

TREATMENT OF WASTE RUBBER FOR RECOVERY OF ITS INGREDIENTS. G. L. Gaulthier. *Rev. gén. mat. plastiques*, 4, 1929, p. 679.

RUBBER ROLLS. J. Panem, *Rev. gén. caoutchouc*, Jan., 1930, pp. 3-4.

WHAT IS THE REASON FOR THE USE OF HARD RUBBER DUST IN EBONITE MIXINGS AND WHAT ADVANTAGES DOES IT OFFER? Frank Bath, *Rev. gén. caoutchouc*, Jan., 1930, pp. 5-6.

RUBBERIZING FABRICS FOR BELTING BY MEANS OF CONCENTRATED LATEX. P. W. Hutchinson, *Rev. gén. caoutchouc*, Jan., 1930, p. 7.

COLORING RUBBER. F. Jacobs. (Serial article). *Rev. gén. caoutchouc*, Jan., 1930, pp. 9-16. Illustrations.

DRYING RECLAIMED AND CRUDE RUBBER IN SHEETS. B. Lagrange, *Caoutchouc & gutta-percha*, Feb. 15, 1930, pp. 14885-87.

STEAM AND HOT WATER ACCUMULATORS. M. Varinois, *Caoutchouc & gutta-percha*, Feb. 15, 1930, pp. 14893-95.

ON THE QUESTION OF THE SOLUBILITY OF HIGH MOLECULAR SUBSTANCES, PARTICULARLY OF RUBBER. Paul Stamburger and Claude M. Blow, *Kautschuk*, Feb., 1930, pp. 22-27. Tables, diagrams.

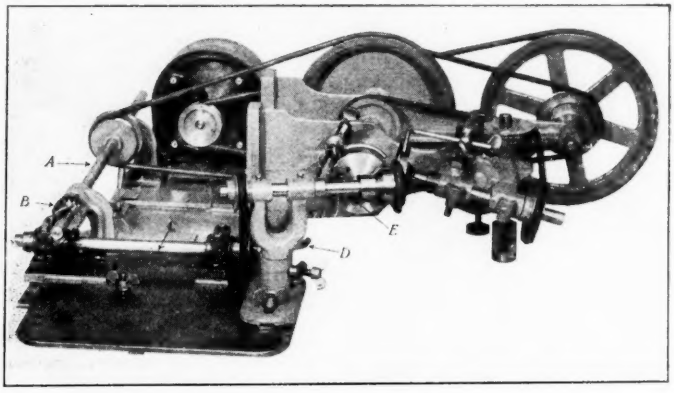
ADSORPTION-CHEMICAL STUDIES OF RUBBER FILLERS AND MIXINGS, I. G. Fromandi, *Kautschuk*, Feb., 1930, pp. 27-30. Graphs, tables.

SPIRAL PATTERN OF RUBBER. F. Kirchhof, *Kautschuk*, Feb., 1930, pp. 31-33.

VULCANIZATION WITH CHLORIDE OF SULPHUR. Erich Wurm, *Kautschuk*, Feb., 1930, pp. 33-36.

THE AVERAGE PASSENGER CAR REQUIRES 12 pneumatic tires and the average truck 20—but this is in the British Gold Coast territory, Africa. Under-inflation, overloading, and high heat soon shorten tire life in that replacement paradise.

New Machines and Appliances



Morris New Automatic Trimmer

New Automatic Trimmer

THE introduction of automatic trimming machinery for molded rubber goods dates back about twenty years. They were designed for heel trimming to displace costly and defective hand work with shears. In the intervening period improved models and new equipment have kept these machines abreast of the demands of mass production of large and small molded articles of many kinds other than heels.

A front view of one of the latest improved machines is represented in the illustration. It is adapted for trimming circular or round molded rubber goods of every description, from the smallest diameter up to 8 inches. The design is entirely new and all adjustments are made by thumb screw.

At the base of the machine is a counter shaft *A* connected to the main driven pulley of the machine. At the front end of the countershaft is a pair of spiral gears *B* for driving the right-angled shaft *C*. On the right-hand side of the table a bearing stand *D* is located for supporting the trimming die holders. The trimming die shaft *E* is connected to the right-angled shaft by a pair of grooved pulleys with belt as shown.

The table supporting the right-angled shaft, spiral gears, and bearing stand can be moved in or out as desired. The bearing stand, which supports the die holder shaft, is provided with a radial adjustment controlled by a thumb screw and lock nut, held taut by a spring, which allows the rubbers to cushion themselves against the trimming knives. This is very important in trimming small goods. The bearing stand also can be independently moved forward or back when making the radial adjustment.

The operation is as follows: With the correct trimming die holder in position and the proper adjustment made, a rubber is lightly pressed against the revolving die. It instantly starts revolving and is trimmed. At that instant, also, it is released and the operation repeated on the next piece. A receptacle receives the trimmed goods as they fall.

The machine is hinged to the base and in its horizontal position is supported at the hinges and by an adjustable leg support screwed on the end of the idler pulley shafting. This adjustable leg raises or lowers the knives at the trimming position as desired.

By the hinge provision the machine can be raised to an upright position for trimming a variety of rubber articles by addition of the standard attachments supplied.

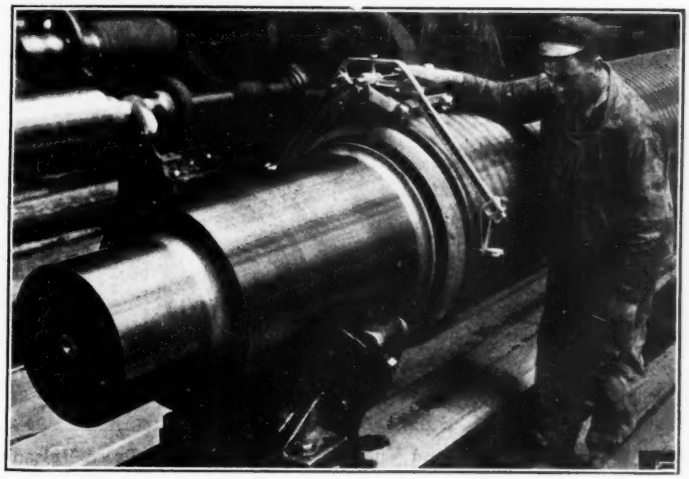
The machine has been developed along the most modern lines for simplified adjustment, safety, and economy in operation. It is perfectly balanced and finely constructed. Its production capacity is double that of any machine of this sort previously offered. T. W. Morris, 6312 Winthrop Ave., Chicago, Ill.

Roll Indicating Caliper

ACCURATE determination of roll diameters is very essential when finished rolls are to be ground and crowned to close tolerances, as for example in finishing large calender rolls and in the production of rubber covered paper machine press rolls. The instrument here illustrated has been developed for measuring such large sized rolls and determining their accuracy and the amount of crown or concavity. As pictured, the device consists of a saddle with four rollers on which it is moved along the surface of the roll being gaged. A cross bar is mounted on a pintle on this saddle to which are attached graduated bars extending downward on either side of the roll. A movable arm is provided on each of these bars. On one of these arms a ball head screw contacts with the roll on one side. On the other arm a dial indicator is mounted, which contacts the roll on the opposite side.

The entire unit is rolled along upon the roll or cylinder, and any variation in the diameter is indicated on the dial gage. Readings as high as 0.500-inch may be obtained, and the instrument measures straight, crowned, or concaved rolls with equal facility.

The rolling contact eliminates friction and prevents chattering of the indicator needle. Most of the parts are made of aluminum for ease in handling. The cross bar is movable along the saddle, carrying the indicator to the extreme end of the roll without reversing the saddle. Positive setting is obtained by gibs under the set screws in the movable arms; this prevents



Farrel Indicating Caliper

slipping. One measurement of the roll with an ordinary micrometer caliper gives a starting point for determining exact diameters with the indicating caliper. When changing from one diameter to another, only two parts need to be moved.

The instruments are built in five sizes suitable for rolls 20 to 50 inches, 16 to 42 inches, 11 to 32 inches, 8 to 24 inches, and 4 to 17 inches in diameter. Each size takes the minimum and maximum diameters consistent with precision. The caliper is disassembled and packed in a convenient wood carrying case. Farrel-Birmingham Co., Inc., Ansonia, Conn.

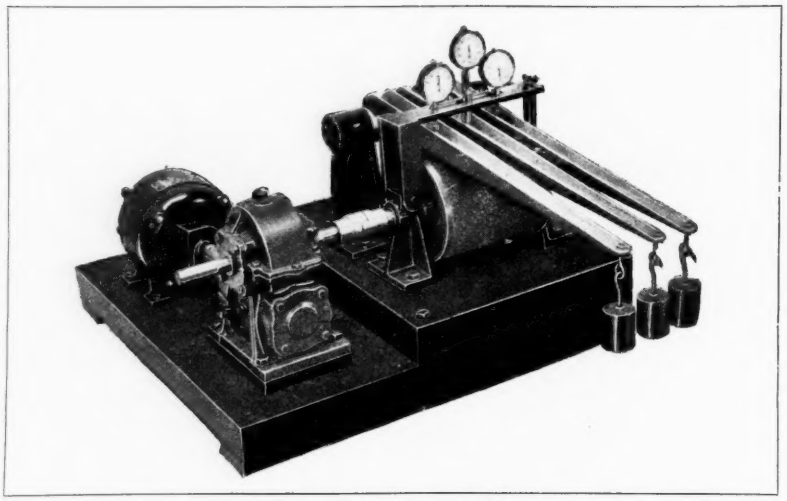
Laboratory Mixing and Curing Equipment

A COMBINATION mixing and curing equipment for laboratory use is pictured in the two accompaning illustrations.

The even and friction speed mixing and sheeting mill has been specially designed for dealing with small batches and samples. The cabinet frame is machined and fitted with caps and provided with machined gunmetal front blocks or bearings to carry the front roll. This roll is adjustable horizontally by steel setting-up screws working in breaking bushes housed within the frames. The back roll runs in bearings in the frame with gun metal bushes.

The two rolls are deep chilled cast iron, 6 and 7 inches diameter by 12 inches wide on the face. They are chamber cored and fitted with glands and nozzles for steam-heating and water cooling. The machine is driven by a 5 h.p. electric motor through machine cut reduction gearing and flexible coupling. A special change speed gear box is provided at the end of the machine, and by turning a hand-wheel mounted on the gear cover either even speed or a friction ratio between the rolls can be employed.

On the same base with the mill and motor is mounted a vulcanizing pan of the jacketed type. It is 12-inches in diameter and 12 inches deep inside, constructed of mild steel plates and fitted with a cast steel bolted cover and balance weight. The whole apparatus is tested for a working steam pressure of 60 pounds per square inch. Steam inlet and drain valves to both jacket and pan are provided, also steam pressure gage with siphon.



Abrasive Resistance Machine

The second illustration represents a laboratory hydraulic autoclave press designed for vulcanizing small molded samples. The press consists of a cast steel single cased pan, 18 inches diameter by 15 inches deep inside, fitted with a balanced self-locking cover.

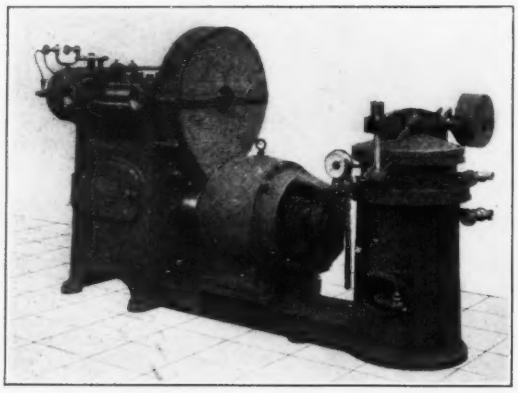
The pan, which is mounted above an hydraulic cylinder on three turned steel pillars, has a stuffing box and gland at the bottom through which passes a 6-inch diameter ram fitted at the head end with a circular cast iron table to receive the molds. The hydraulic cylinder is bored out to suit the ram and is fitted with an hydraulic packing in the usual way. A gun metal hydraulic control valve is provided, also hydraulic and steam pressure gages. The press is constructed throughout for a working hydraulic pressure of one ton per square inch, and the pan for a steam pressure of 60 pounds per square inch. Joseph Robinson & Co., Ltd., Salford, Manchester, England.

Abrasive Resistance Tester

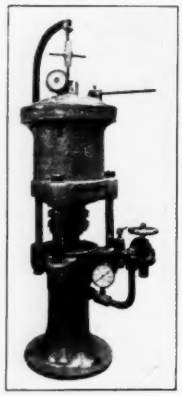
THE device pictured here resulted from research at the U. S. Bureau of Standards Rubber Testing Laboratory. The constants of the machine are such that the wear period is sufficiently long to allow close comparison between specimens without unduly lengthening the test.

The machine consists essentially of a drum 6 inches in diameter covered with standard garnet paper held in place by heavy elastic rubber bands. The drum is driven by a ⅛ h.p. motor AC or DC through a 40 to 1 speed reducer. Three independent levers, each weighted at their unsupported ends, carry on their undersurfaces the test specimens. These are 1 inch square by ¼-inch thick and three specimens can be tested simultaneously. The speed of the machine is substantially constant, and the revolutions are counted by a counter attached to the drum axis but not shown in the photograph. The counter may be reset to zero after each test.

The wear on each specimen is measured by an accurate dial gage readable to 1/1000-inch. The weight of the lever arm is so adjusted that a pressure of exactly 5 pounds is exerted on the specimen. The garnet paper used is of standard manufacture and, therefore, readily obtainable. The dimensions of the machine are 24 by 24 by 14 inches. American Instrument Co., Inc., 774-776 Girard St., N. W., Washington, D. C.



Mill, Motor, and Vulcanizer



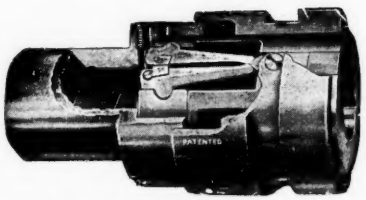
Press Vulcanizer

Robinson's Laboratory Equipment

Improved Clutch

AN improved clutch, known as the Super-Clutch, is here pictured. In the past, carbon steel drop forged clutch fingers, called also clutch levers or toggle levers, have been used and have given a powerful and dependable grip over a long period of time without excessive wearing, slipping, or faulty catching. This new clutch is equipped with chrome nickel steel fingers, which are guaranteed to increase further the wearing qualities and reduce breakage to a minimum. The clutch has also been improved by installing a method of locking the adjusting screw, whereby the adjustment on any clutch remains where it has been set by the operator. The adjusting screw cannot loosen up because of vibration, high speed, or any other operating condition.

Another improvement is the replacement



Johnson Single Clutch—Sectioned

of tool steel adjustment blocks with chrome nickel steel blocks, which are really the heart of the clutch. The elimination of breakage from fire cracks in the hardening of these parts through the use of chrome nickel steel practically makes the Super-Clutch trouble proof. Still another improvement is the alemite system of lubrication, which means only one point of lubrication is necessary on the clutch instead of two or three when using oil. Grease is forced into the interior of clutch and continuously lubricates all parts thoroughly. The Carlyle Johnson Machine Co., Manchester, Conn.

German Belt Curing Press

IT is only within a few years that much has been heard in Germany about the construction and use of long presses for vulcanizing rubber power transmission and conveyer belting. The short presses previously used added excessively to the cost of rubber belting. The first step in belt press improvement was to lengthen the curing plates to 15 meters (50 feet) length and make them adjustable. In a press of such length it is essential to provide enough hydraulic rams, spaced at suitable intervals to insure ample pressure equally distributed over the surface of the curing plates. The general practice is to support the press plates on a structure of steel plates.

Belt presses are made both in the open or the closed form. The open construction pictured herewith is very much simplified and in most cases has preference over the closed one. Extra-wide press plates require extra-strong and expensive framing to maintain the parallelism of the plates across their width. The limit of the open construction is from 800 to 1,200 m.m. (31 to 47½ inches) width of press surface. Belt presses are now made in this construction with 1, 2, and 3 curing decks with side opening. Where greater widths are required, the presses are built with a separate operating and storage table.

A portable curing press for work in curing splices in endless belts when erected on the job is also illustrated. The press shown is for steam-heated platens. They are also arranged for electrical heating. The construction embodies 4 pairs of steel channels, one pair for each press. The lower channel members carry long hinged bolts threaded at the top and provided with nuts to supply pressure by hand upon the belt joint as it lays between the curing plates. Eisen-und Emaillierwerke A. G., Sprottau-Wilhelmshütte, Germany.

Detecto-gram Compound Scale

Detecto-gram Scale

THE weighing scale here pictured is known as a Detecto-gram by reason of the fact that it is designed to show minute overweight or underweight and detect errors. Close weighing is a matter of much importance for the manufacturer who desires to maintain the quality of his goods and economy of material. With the scale illustrated an overweight error of ⅛ of an ounce is visible at a distance of 30 feet.

It is an even balance scale with a special large 4-inch dial and an indicator which travels one inch to the ounce. The intervals between the ounce marks on the dial are wide enough so that even 1/32 of an ounce is visible. Withal, the operator's time is conserved by a quick stop device. The latter is a large diameter dash pot that balances the scale instantly after the commodity is placed on the scale. The instrument has no springs and only two moving parts. It requires no leveling and no adjusting.

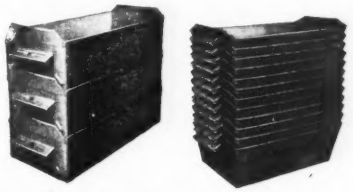
A scale of this sort is particularly desirable for weighing closely such compounding ingredients as accelerators, anti-oxidants, colors, sulphur, etc. The Detecto-gram is made in capacities for 3, 8, and 16 pounds by quarter ounces. The Jacobs Bros. Co., Inc., 32 Walton St., Brooklyn, N. Y.

Compound Tote Boxes

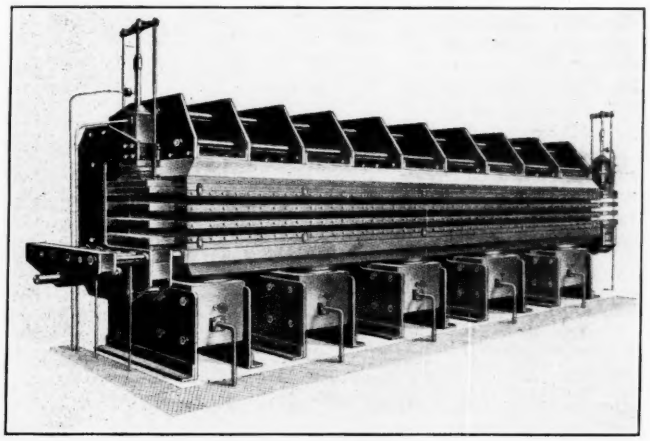
TOTE boxes for rubber compounding work are preferably of the stacking or the nesting type as represented in the accompanying illustrations. The advantage of the stacking type is that the boxes may be set together whether loaded with a weighed batch of ingredients or when empty. The nesting box can be nested only when empty, but has the advantage of occupying less space when in that condition.

The stacking box here pictured has maximum strength with minimum weight. It is electrically welded throughout with half-round runners welded to the bottom. The handles are extra strong, being double folded metal.

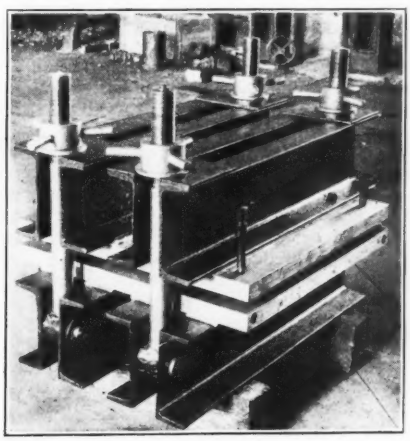
The nesting boxes are notable for their stiffness, lightness, durability, and close nesting. They are of one piece construction except the handle, and their design positively prevents sticking when they are nested. The New Britain Machine Co., New Britain, Conn.



Stacking and Nesting Compound Boxes



Three-Deck Steel Plate Belt Press



Portable Belt Splicing Press

Financial and Corporate News

United States Rubber Co.

A deficit of $3,378,412 is reported by the United States Rubber Co. for 1929. This compares with a deficit of $10,781,000 in 1928.

Consolidated net income in 1929, after interest on funded indebtedness and after provision for depreciation at the rate followed in previous years, was $3,297,335 before adjustment of the value of rubber in inventories and before extraordinary expenses incurred in connection with the concentration and reorganization of operations.

To THE STOCKHOLDERS: During the year ended December 31, 1929, your company has undergone certain changes in organization designed to improve its operating conditions and general financial and business structure. A departmental form of organization has been installed with corresponding changes in personnel and realinement of production and distribution activities. A finance committee and an executive committee were created to supervise financial and general operating policies of the company.

During the year, six factories were closed and plans are under way to continue the concentration of the manufacturing and distributing operations of the company. These obsolete factories, including those long since closed, are being offered for sale. The concentration of these manufacturing activities and the reconstruction of the organization have necessitated extraordinary expenditures for the moving and disposition of equipment, inventories, and men, and have resulted in temporarily higher costs. Since all projected improvements have not been completed, these unusual expenses will continue during the year 1930. No changes have been made, or will be made, unless decided improvement in operations is evident and benefits due to such changes should result in improvement of earnings in future years.

In October, 1929, the stockholders approved bonus and managers shares plans. The initial steps in connection with these plans are being taken, but no distribution of bonus was made during the year as earnings were not available.

Net sales for the year, after all discounts and allowances, amounted to $192,962,040. Sales for the year 1928 were $193,480,121.

Sales of waterproof footwear showed improvement over 1928 both in dollar value and units, as did sales of Keds, the rubber soled canvas shoe. Sales of products for industrial uses also showed satisfactory improvement.

Sales of tires, expressed in units, were higher, but lower selling prices caused a reduction in dollar value. Tire sales, particularly to automobile manufacturers for original equipment, were appreciably lower in the latter months of the year.

Sales of our products in foreign countries again showed a substantial increase.

Sales of chemicals manufactured by the chemical subsidiary, which supplies your company as well as other consumers, continued to improve. Sales of reclaimed rubber were adversely affected by curtailment in production by tire manufacturers and by lower selling prices.

Inter-company sales by subsidiaries are not included in the consolidated sales as reported above, and profits derived from inter-company sales will not be taken into the consolidated earnings of the company until the manufactured articles are sold to customers.

The research laboratories of the development department are now located at Passaic, N. J., where adequate facilities have been provided for carrying on the important work of broadening our field and developing our products.

Consolidated net income for the year, after interest on funded indebtedness and with provision for depreciation at the rate used in previous years, amounted to $3,297,335 before adjustment of the value of rubber in inventories and extraordinary expenses incurred during the year incident to concentration and reorganization of operations. The decline in the market price of crude rubber to 16 cents a pound at the close of the year caused an adjustment of $2,721,326, leaving net income for the year of $576,009 before extraordinary expenses. Provision for depreciation of plants was increased $1,490,421, extraordinary expenses amounted to $2,464,000, making a total of $3,954,421, which resulted in a deficit of $3,378,412.

Provision is made also for extraordinary charges to be incurred in connection with future changes in organization and for contingencies, of $4,000,000.

Net current assets, after deducting the 7½ per cent and 6½ per cent notes maturing in 1930, total $79,448,366.

Inventories of crude rubber, both as to raw materials and in finished products, were valued at the base price of 16 cents a pound. The value of other inventories was at cost, which was approximately at market or lower. Commitments for future purchases were for conservative periods.

Trade acceptances and drafts against export shipments, discounted by subsidiary companies and outstanding as of December 31, 1929, amounted to $1,426,726.

During the year $2,996,908 was charged against the reserve for adjustment of obsolete property and equipment and other contingencies, for which $10,000,000 was set aside at December 31, 1928.

In August, 1929, your company purchased certain patent rights and a controlling interest in the capital stock of Dispersions Process, Inc., a company owning important patents covering the use of rubber in liquid form.

The net earnings of the plantations for the year amounted to $666,044 after ample reserves for amortization of the cost of development, depreciation of plant and equipment, and foreign income taxes. These profits were not included with the earnings of the United States Rubber Co.

The total area of the plantations, which are located in Sumatra and Malaya, is 135,160 acres. About 92,600 acres have been planted and over 64,000 acres are in bearing, including 5,000 acres that became mature during 1929. Production for the year amounted to 32,971,000 pounds, as compared with 28,767,000 pounds in 1928.

Your company continues to maintain its preeminent position in the production of crude rubber. The largest plantations unit, consisting of more than 46,400 acres in tapping, now yields 570 pounds an acre per year, compared with 386 pounds an acre per year, which is approximately the average obtained by the rubber producing industry as a whole.

F. B. DAVIS, JR.,
Chairman.

1790 Broadway, New York.
March 4, 1930.

Westinghouse Electric Reports Record Sales

As shown by its annual report, which was made public on March 12, the sales billed, the orders booked, and the net income of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., for the year ending December 31, 1929, exceeded those for any previous year in the company's history. The income account for 1929 follows:

Gross Earnings	1929
Sales billed	$216,364,588
Cost of sales	194,371,987
Net manufacturing profit	21,992,601
Other income	5,323,743
Gross income from all sources	27,316,344
Interest charges, etc.	253,733
Net income available for dividends and other purposes	27,062,611

The volume of unfilled orders on January 1, 1930, was $62,025,399, a gain of approximately $15,000,000 over last year.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Faultless Rubber Co.	Com.	$0.62½ q.	Apr. 1	Mar. 15
Firestone Tire & Rubber Co.	Com.	$0.40 q.	Apr. 21	Apr. 4
General Tire & Rubber Co.	Pfd.	$1.50 q.	Mar. 31	Mar. 20
Goodyear Tire & Rubber Co. of Calif.	7% Pfd.	$1.75 q.	Apr. 1	Mar. 20
Goodyear Tire & Rubber Co. of Can.	Com.	$1.25 q.	Apr. 1	Mar. 15
Goodyear Tire & Rubber Co. of Can.	Pfd.	$1.75 q.	Apr. 1	Mar. 15

The total of current assets is more than six times the total of current liabilities, which represent the entire indebtedness of the company. The surplus shows an increase during the year of $29,729,690. The operating income for the year was $27,062,611, and deducting the dividends paid or declared aggregating $11,327,668, the increase in surplus from operations was $15,734,943. The balance, $13,994,747, of the total increase in surplus represents the net gain from the sale during the year of additional common capital stock at a premium, the proceeds from which sale were used to redeem the outstanding issue of $30,000,000 bonds which were called for redemption on March 1, 1929. The company now has no capital liability of any nature other than its capital stock. The number of stockholders rose to 44,088, an increase of over 9,000 during the past year.

Raybestos-Manhattan, Inc.

TO THE STOCKHOLDERS: The earnings of your company for the year ended December 31, 1929, including the financial operations of its predecessors, which, on September 16, 1929, formed Raybestos-Manhattan, Inc., were $3,206,293.80, or $4.74 per share on the 676,012 shares outstanding. These results compare as follows with those of the same units for the year preceding:

	Year 1929	Year 1928
Net sales	$22,290,619.11	$21,008,883.27
Net income available for dividends	3,206,293.80	2,465,585.96
Earnings per share on 676,012 shares, stock outstanding.	4.74	3.64

The company's dividend requirements are $2.60 per share. The earnings for the year 1929 were arrived at after making full provisions for taxes, depreciation, and the reduction of the company's inventories to current market values. These provisions were $416,628.10 for taxes, $591,151.06 for depreciation of properties, and $343,535.21, or 51 cents per share for adjustment of inventories. This latter adjustment, or some substantial part of it, may be recovered during the year 1930.

Your company has no funded debt or bank loans. Its current assets, including $3,471,795.25 of cash, call loans, and other marketable securities, amounted to $9,962,608.17, and were nearly nine times the current liabilities of $1,143,198.46. During the year, expenditures of $974,184.28 were made upon improvements in the company's fixed properties, and $682,771.13 upon the maintenance thereof, in addition to the provisions for depreciation, already mentioned.

All of the stockholders of the companies which merged under the plan and agreement dated May 22, 1929, have deposited their shares, with the exception of two, each holding one share, who are now going through the required formalities so that shares of Raybestos-Manhattan, Inc., may be issued to them.

The companies which formed the merger have been organized into divisions, and are operating successfully to the satisfaction of your officers and directors. During the past year approximately 43 per cent of the company's business was done with the automotive industry, a large portion being in the replacement field, and 57 per cent with other industries widely diversified. The volume of business during recent months has shown gratifying improvement.

We look forward to the profitable development of the business along lines which will be a credit to the successful organizations that merged to form your company.

S. SIMPSON,
President.

Bridgeport, Conn.,
March 14, 1930.

Legal

Drawbacks

RUBBERIZED PIECE GOODS, No. 43,888 (J). The third paragraph of T. D. 43,635-O of Oct. 24, 1929, providing for allowance of drawback on rubberized silk piece goods, dress shields, and silk bias bindings manufactured by the I. B. Kleinert Rubber Co., New York, N. Y., with use of silk piece goods either in condition as imported or after having been processed by firms operating under drawback regulations or having on file sufficient sworn statements under the provisions of T. D. 35,965 of Dec. 10, 1915, as amended and extended, is amended to read as follows:

The drawback allowance shall not exceed the duty paid, less 1 per cent thereof, on the quantity of imported silk piece goods used in the manufacture of the exported rubberized piece goods. The basis for liquidation in the case of dress shields and bias bindings shall be the quantity of imported silk piece goods used in the manufacture thereof.

When the piece goods have been processed, the allowance shall not exceed the drawback accruing to the above quantities.

Amendment effective Apr. 22, 1929. *Treasury Decisions*, Vol. 57, No. 11, pp. 12-13.

RUBBER SOAP DISHES AND SPONGES. No. 43,888 (L.) Manufactured by the Rubber San Products, Inc., New York, N. Y., with the use of imported sponge rubber blocks. The drawback allowance shall not exceed the duty paid, less 1 per cent thereof, on the quantity of imported material used in the manufacture of the exported products, the drawback to be distributed to the soap dishes and sponges in accordance with their relative values at time of separation.

Rate effective on and after June 27, 1929. *Treasury Decisions*, Vol. 57, No. 11, pp. 13-14.

Treasury Decisions

PRINTERS' BLANKETS. No. 43,891. Protests 38,766-G, etc., of Fuchs & Lang Mfg. Co. (New York). Printers' blankets, composed of cotton and india rubber, classified as manufactures in chief value of cotton at 40 per cent ad valorem under paragraph 921, tariff act of 1922, are claimed dutiable at 25 per cent under paragraph 1,439, as manufactures in which the chief value is india rubber.

Opinion by J. Weller. The burden was on the importer to prove its claim, but this we do not consider it has done. The protests are therefore all overruled. Note Vandiver v. United States, 2 Ct. Cust. Appls. 505, T. D., 32,246; also United States v. Gredelue, 5 id. 298, T. D. 34,476. *Treasury Decisions*, Vol. 57, No. 11, pp. 27-31.

Shareholders Asked to Increase Goodyear Stock

Paul W. Litchfield, president of The Goodyear Tire & Rubber Co., Akron, O., in a letter to all stockholders asking them to authorize an increase of common stock from 1,450,000 to 5,000,000 shares at the annual meeting, said in part: "The issuance of additional common stock during the last 18 months has practically exhausted the authorized but unissued capital, and, while your company has no immediate purpose in view for which additional shares might be required, in the present state of industry there may develop opportunities to acquire on advantageous terms property valuable to your company, which your board should be in position to act upon."

Stockholders will be requested to authorize also the issuance of the balance of the unissued first preferred stock at the discretion of the board of directors.

NEW INCORPORATIONS

AMAZON RUBBER CORP., Feb. 19 (Delaware), capital stock 500 shares preferred, par value $100, and 20,000 shares common without par value. H. E. Grantland, H. H. Snow, and L. E. Gray, all of Wilmington, Del. To manufacture, deal, etc., in crude rubber, balata, gutta percha, and kindred goods and products.

THE CHARDON RUBBER CO., (Ohio), $24,000. R. H., S. S., and H. K. Bostwick, all of Chardon, O. Principal office, Chardon, O. To manufacture and sell rubber merchandise.

RODIC RUBBER CORP., Mar. 10 (Delaware), capital stock 1,000 shares without par value. H. E. Grantland, H. H. Snow, and L. E. Gray, all of Wilmington, Del. To engage in merchandising, manufacturing, and trading.

TRIANGLE RUBBER CO., INC., Mar. 18 (New York), capital stock 100 shares par value $100 and 250 shares without par value. H. P. Campbell, 168-86th St., T. E. Neill, 1853 E. 27th St., and M. J. Fina, 7212-13th Ave., all of Brooklyn, N. Y. Principal office, Manhattan. Rubber goods dealer.

WILKINSON PROCESS RUBBER SALES CORP., Feb. 20 (Illinois), $250,000. Principal office, 53 W. Jackson Blvd., Chicago, Ill. To import, fabricate, and handle Linatex, a cold cured plantation rubber which can be manufactured only in rubber growing countries.

The Rubber Industry in America

OHIO

Palmer Gas Products Corp.

The Palmer Corp. is one of the pioneers in natural gas development in the Southwest, and last year joined the Electric Bond & Share Co. in forming the Louisiana Gas & Fuel Co., the largest owner and distributer of gas in Louisiana.

N. C. McGowen, formerly manager of the Palmer interests in Louisiana, heads this new combination which will be the nucleus of a super gas system that already reaches as far north as St. Louis and east to Birmingham and Atlanta. Reports are current that this combination is now taking over the United Gas Co. system throughout Louisiana and Texas with 3,000 additional miles of pipe line.

The Palmer Gas Products Corp. continues under the management of Mr. McGowen and includes all of the carbon black manufacturing units of The Palmer Carbon Co., North American Carbon Co., Louisiana Gas & Fuel Co., and The Panhandle Carbon Co. situated in Louisiana and Texas.

The principal sales office of the company is in Akron, O., with John W. Herron, vice president, in charge.

Goodrich-Miller Terms

Final terms on which The B. F. Goodrich Co. absorbs The Miller Rubber Co. have been announced in a formal statement by The First-City Trust & Savings Bank, all of Akron, O., as liquidator of the latter company. Distribution of the 113,504 shares of Goodrich common, without par value, issued in payment of the Miller assets, began on March 26.

Holders of more than 90,000 shares of Miller preferred stock, who assented to the plan at a meeting on February 17 or who have agreed to the plan by the deposit of their certificates for stock, will receive between 74-100 and 75-100 of a share of Goodrich common for each share of assenting Miller preferred. The exact amount will be determined as of the close of business on March 22, 1930.

Holders of Miller common shares who have not dissented and demanded payment for stock under the laws of Ohio and who accept such distribution in extinguishment of their rights, will receive one share of Goodrich common for each share of Miller common held.

Fractional Goodrich shares will not be issued, but scrip certificates for fractional interests in multiples of 1-100 of a share will be issued and cash settlement will be made for any lesser fraction of a share.

H. A. Winkelmann Joins Palmer Gas Products Corp.

The well-known rubber technologist, Dr. H. A. Winkelmann, has relinquished his position as chief chemist of The Philadelphia Rubber Works Co., Akron,

H. A. Winkelmann

O., and accepted the appointment as chief chemist for The Palmer Gas Products Corp., Shreveport, La. This concern is a large producer of carbon black for the rubber industry and is connected with the major natural gas developments of the Southwest.

Dr. Winkelmann will have complete charge of development work in connection with rubber compounding laboratories now being established at the plants of the Palmer Gas Products Corp., which aims toward a control of quality commensurate with the requirements of the consumer. The Palmer plants are so grouped that a practical control does not meet the obstacles attendant to widely scattered production.

Dr. Winkelmann is an alumnus of the University of Illinois. During the war he was captain in the U. S. Chemical Warfare Service, and in 1919 joined the scientific staff of The B. F. Goodrich Co., Akron, where he occupied successively the positions of research chemist, research compounder, and technical superintendent of the tire division.

His scientific contributions to rubber chemistry rank high. He is vice chairman of the Rubber Division of the American Chemical Society and a past chairman of the Akron Rubber Group. The Institution of the Rubber Industry in Great Britain honored him with a fellowship recently.

Goodrich Personnel

The B. F. Goodrich Co., Akron, O., through Thornton G. Graham, first vice president, has announced several additional changes in personnel at Miller Rubber Co., Inc., new Goodrich subsidiary acquired through the recent purchase of The Miller Co. G. E. Brunner has been made sales manager of the Miller tire division. His assistants are: E. P. Weckesser, manager, automobile tire sales; A. L. Bowman, manager, truck tire sales; J. W. Hodgson, manager, accessories, repair materials, and special brand products; W. J. Frisby, manager, operating division; H. B. Sherbondy, stock distribution division; Guy Blanchard, advertising manager. L. L. Black will have charge of the Miller eastern division, E. Farr, the western division, and Mr. Brunner, the southern division as heretofore. Pacific Coast division will be supervised from the Pacific Goodrich offices in Los Angeles, Calif.

L. C. Rockhill, formerly Miller vice president in charge of sales, has come to the Goodrich organization as merchandising counsel. W. C. Behoteguy, of Mr. Rockhill's former sales executive personnel, has also joined the Goodrich tire sales division. G. S. Earseman will do sales personnel work for Goodrich as soon as he has completed similar duties in the new Miller organization. F. W. Lohmann, assistant to Mr. Rockhill in the old Miller organization, has resigned and taken a vacation before announcing future plans.

Mr. Graham said that the Goodrich management welcomes the Miller organization and that every Goodrich facility will be available for the development and expansion of Miller business. He declared, too, that Goodrich intends continuing to expand the operation of the Miller plant and that Miller tires will continue in production there exactly in accordance with present specifications.

Lee Shoenhair, Goodrich pilot, who now holds six world's records, is planning three more record-breaking flights in Florida, Goodrich officials announced. He hopes to annex two more of the world's records for varying loads carried in a passenger plane over a 1,000-kilometer course. Next May he will attempt to break the dawn to dusk record of Captain Frank M. Hawks for a flight from New York to Los Angeles.

A motion picture news service has enlisted the aid of the Goodrich pilot and

the Goodrich plane to enable it to get pictures of the attempt of Kaye Don, English racing driver, to break the world's straightaway record at Daytona Beach, Fla.

Goodyear Activities

The Goodyear Tire & Rubber Co., Akron, O., leads the world in the construction of non-rigid airships by private concerns. Its 127th ship has been started, and it has delivered more than 100 to the government for use by the army and the navy. In addition Goodyear has built 903 captive observation and barrage balloons, 105 spherical racing and training balloons, one semi-rigid airship, 58 rigid-airship gas-cells, and 2,000 advertising balloons.

F. W. Lohmann, recently resigned from The Miller Rubber Co., Akron, returned to Goodyear on April 1. Mr. Lohmann was with Goodyear for fourteen years in operating and sales departments before going to Miller. He will be attached to the division offices, Goodyear officials announced.

James R. Warfel, of the labor training department, has been placed in charge of the mechanical goods department of Goodyear at Sydney, Australia. His stay there will be indefinite, it was said by Goodyear officials. Mr. Warfel has been with the company eight years, most of the time in the labor training department.

In recognition of his twenty years' service with Goodyear, Charles E. Cannon, personnel manager, was awarded a 20-year service pin, presented by R. S. Wilson, vice president and sales manager of Goodyear.

Vice President and Factory Manager C. C. Slusser was on a month's business trip to England.

The Goodyear blimp "Defender" was slightly damaged on March 4, while engaged in an operation at Verobeach, Fla.

Goodyear Experiments with CO_2

It has been authoritatively confirmed that The Goodyear Tire & Rubber Co., Akron, O., has signed a contract with The Liquid Carbonic Corp., under which it will install experimental equipment necessary to test that corporation's patented process of vulcanization.

By the new method tires are cured by heating them inflated with the inert and nonoxidizing carbonic acid gas, which in turn is preheated through the utilization of part of the externally applied heat. The withdrawal of a portion of the outer heating medium effects the circulation of the remainder and a greater transfer of heat to the mold.

The Goodyear company has not yet changed over to this new process in its production methods but for the present is experimenting with it and considering the cost involved as a production method.

Rubber Engineer Wins High Repute

It falls to the lot of few in his profession to win thus early in life so superior a position as that which Charles Edward Bishop has achieved as an all-around rubber engineer. Yet he modestly claims no special credit for the distinction he has won, attributing his success mainly to a decided flair for such work and a fondness for accuracy, coupled with close study and hard work.

Born in Loudonville, Ashland County, O., October 18, 1881, Mr. Bishop received a high school education in his native town, and followed this with a course in mechanical engineering in the Ohio State University, Columbus, O. The death of his father cut short his studies and obliged him sooner than expected to earn his livelihood. For the first five and one-half years, he was engaged in golf-ball making and in preparing material and caring for presses in the hose and mechanical goods department of The B. F. Goodrich Rubber Co., Akron. For the next year and a half, he specialized in golf balls and hose with the Republic Rubber Co., Youngstown, O., and for the following year and a half he was foreman of the mill and refining department of the Alkali Rubber Co., now the Philadelphia Rubber Works.

C. E. Bishop

Next, for six years he was superintendent of the solid tire division of The Goodyear Tire & Rubber Co., Akron, and for seven and a half years was superintendent of the Goodyear reclaiming division. For the succeeding two years he was vice president and factory manager of the Akron Rubber Reclaiming Co., Barberton, O. Another two years were spent as consulting engineer. He furnished plans and specifications and acted as consultant for the reclaiming plant at Kenmore, O., for the Miller Rubber Co., and served in the same capacity for the Endicott-Johnson Shoe Corp. in the construction of its plant in Johnson City, N. Y.

Mr. Bishop was also associated with Frank A. Seiberling and William Welch in the incorporation in 1923 of the Akron Rubber Reclaiming Co., Barberton, O., and was vice president, member of the board, and factory manager until he resigned after long service so as to concentrate on consulting engineering for the rubber industry. Quite some time ago he completed a contract as factory manager of the Premier Rubber Manufacturing Co., Dayton, O., reorganizing and revamping the works' plans. Latterly he has been factory manager of the Rubber Recovery Co., Akron, for which he is planning the most efficient equipment and up-to-date processes for the production of standard reclaim and special stocks.

Rubber literature has been enriched by Mr. Bishop with a series of papers on the history, theory, and practice of reclaiming that attest his mastery of the subject.

The French Oil Mill Machinery Co., Piqua, O., maker of hydraulic presses, pumps, accumulators, and valves, is now represented in the Akron, O., territory by B. W. Rogers, 109 N. Union St.

The Goodyear-Zeppelin Corp., Akron, O., is honored with a visit by Dr. Hugo Eckener, who came to see his son Knut, employed at the Goodyear-Zeppelin factory. In Akron, Dr. Eckener will discuss developments in the formation of the International Zeppelin Transport Co. with Goodyear-Zeppelin officials. While in this country the famous commander of the "Graf Zeppelin" will be presented with a gold medal by the National Geographic Society at Washington, D. C. He probably will also arrange details of the proposed flight of the "Graf Zeppelin" to Brazil and the United States

Cutler-Hammer, Inc., Milwaukee, Wis., pioneer manufacturer of electrical control apparatus, has announced that since February 1, M. C. Steffen has been manager of its Cincinnati, O., office, taking the place of R. I. Maujer, resigned. Mr. Steffen came from the C-H St. Louis, Mo., office, where he had been stationed for the last five years. He is a graduate of the University of Wisconsin, Class '23, and holds a B. S. in electrical engineering.

Cooper Corp. stockholders, Findlay, O., at a meeting on February 27 called to vote upon the proposed merger with the Falls Rubber Co., Cuyahoga Falls, O., which had been recommended by directors of both concerns and approved by Falls stockholders, rejected the plan. All negotiations, therefore, have been dropped. At the meeting Cooper stockholders elected the following directors: I. J. Cooper, J. M. Hutton, A. H. Morrill, Arthur T. Cavey, and John F. Scharfer.

American Association of Draftsmen organization plans, explained by Rowan R. White, temporary secretary of the new organization, were approved at a recent meeting in Akron, O., attended by representatives from fifteen rubber factories and other industries. Included in the purposes of the association are: the improvement of its members as draftsmen, the educational advancement of members in the craft, and the promotion of social activities.

NEW JERSEY

The rubber situation in New Jersey has improved considerably over last month, with increased orders for mechanical goods, tires, and tubes. Conditions are expected to remain good, and manufacturers are much encouraged over the outlook. Plants producing hard rubber goods report enough business to keep factories running normally. Orders for rubber soles and heels also show a slight increase.

The Essex Rubber Co., Trenton, N. J., states that business is steadily increasing and that new and larger orders are being received. The company is operating to normal capacity.

The Murray Rubber Co., Trenton, N. J., reports good business with orders for tires and tubes considerably increased during the past few weeks. The company has not yet reached the decision to abandon permanently manufacturing mechanical rubber goods. The company later may continue making some items while dropping others. C. Edward Murray, Jr., president of the Murray company, has been on a lengthy business trip through the Midwest.

The Thermoid Company, Trenton, N. J., reports improved business. The company is operating both day and night forces. F. Robert Lee, vice president, has returned to the United States after spending several weeks visiting the company's branches in Europe. Robert J. Stokes, president, has been elected to the board of directors of Mercer Hospital at Trenton.

The Puritan Rubber Co., Trenton, N. J., announces that business has shown considerable improvement during the past month and that orders are becoming plentiful. The company operates six days a week. Miah Marcus, treasurer, will leave the latter part of April for an extended trip through European cities.

The Joseph Stokes Rubber Co., Trenton, N. J., soon will open a new machine shop for manufacturing molds for hard rubber goods. The building will be two stories, brick and concrete 50 by 130 feet. The company reports improved business.

Earl G. Sturdevant has resigned as head of the rubber compounding department, Western Electric Co., Inc., New York, N. Y., to accept a position in the General Laboratories of the United States Rubber Co., Passaic, N. J.

Uniflex Rubber Co., 40-42 Paterson Ave., East Rutherford, N. J., manufacturer of molded rubber goods and plumbers' rubber supplies, was demolished by fire, except the trimming and packing department and boiler room, on Monday, March 3. The next day the contractors started rebuilding. On Wednesday the damaged goods were sold. The same day saw the delivery of rubber, compounds, boxes, etc., and manufacturing began on Thursday. On Friday morning shipments of freshly manufactured goods started. The company thanks all those who have helped it during that time.

General C. Edward Murray, president of the Crescent Insulated Wire & Cable Co., Trenton, N. J., on March 8 was given a testimonial dinner at the Carteret Club, Trenton, by the members of the Wayside Club, honoring his twenty-fifth anniversary as quartermaster general of New Jersey. About 300 guests attended.

The India Rubber Co. plant at New Brunswick, N. J., will be razed by the United States Rubber Co., New York, N. Y. Some of the machinery and other equipment has been purchased by L. Albert & Son, rubber machinery dealers, Trenton, N. J. The building, idle since the United States Rubber Co. moved the India Rubber Co. to Providence, R. I., about ten years ago, has been in the market for several years, with no bidders. The remainder of the rubber company's buildings has been purchased by Michael Jelin, of New Brunswick, who will remodel them for factory purposes.

The Rubber & Celluloid Products Co., Newark, N. J., proprietor of the Rubberset Co., has elected the following new officers: president, Mrs. E. A. Spurr; vice president and general manager, H. G. Russell; vice president and general sales manager, J. H. Galloway; vice president in charge of operations, T. B. Denton; vice president in charge of sales, W. R. Wright; treasurer, Frank Fedderson; secretary, J. S. Hays. The former officers were: president, Andrew Albright; treasurer, H. B. Albright; assistant treasurer, Andrew Albright; secretary, T. M. Kays. Andrew Albright resigned because of ill health Mrs. Spurr is his sister.

NEW ENGLAND

Fred H. Amon, recently of The B. F. Goodrich Co., Akron, O., has joined Godfrey L. Cabot, Inc., as technical director of its research and service laboratories in Boston, Mass. His rubber experience covers a period of twelve years in the Goodrich laboratories beginning in 1917, first as works chemist, then as research chemist, and later in the mechanical goods compounding division. Following that he spent four years in the raw materials division, and next was manager of the technical service for the milling and calendering division, and finally he went to the tire compounding division. The experience thus acquired in practical rubber goods manufacturing admirably fits him for his work as technical director of one of the leading carbon black manufacturers for the rubber industry.

Marshall Studio

Fred H. Amon

The Fisk Rubber Co., Chicopee Falls, Mass., according to H. T. Dunn, president, has announced that **G. R. de Learie,** assistant treasurer, will carry on the duties of R. B. McGaw, ex-treasurer, who recently resigned.

Haartz-Mason Rubber Mfg. Co., Watertown, Mass., has announced that on February 27, 1930, its corporate name was changed to Haartz-Mason-Grower Co.

Ernest Jacoby, crude rubber broker, has announced the removal of his offices to 120 Milk St., Boston, Mass. His telephone numbers remain unchanged: Liberty 8371-72.

Ernst A. Wullenweber, for eight years connected with the development department of the Hood Rubber Co., Watertown, Mass., has resigned. Previously he had been with the United States Rubber Co., Detroit, Mich., for ten years. Mr. Wullenweber has not made any plans for the future.

Fred T. Moore, for fifteen years manager of the New England district of The B. F. Goodrich Co., Akron, O., has resigned to take charge of the business in the same territory for the General Tire & Rubber Co., also of Akron. His headquarters are at 560 Commonwealth Ave., Boston, Mass.

The Norwalk Tire & Rubber Co., Inc., Norwalk, Conn., through H. D. Diamond, sales department, reports February shipments in excess of 103 per cent over January, 1930, and also in excess of the same period for 1928 and 1929. J. W. Whitehead, president, has just returned from a trip through the Midwest, and reports a favorable outlook for spring business. The Norwalk company has added several new members to its group of dealers purchasing tires under its new cost plus plan.

Hood Rubber Co., Watertown, Mass. The fifth annual banquet of the bowling league of the Hood Rubber Co.'s heavy goods department was held in the American House, Boston, Mass., last month. Prizes for the season were awarded by President John Hoffman to Walter Bonnell for the high three-

string score and to Roger Harwood for the high single string score. To President Hoffman went the prize given the bowler showing the highest increase that year over his average. The highest team standing was won by the "Grenadiers," consisting of Roy Spear, John Hoffman, William Nolan, and Charles Remington.

Clifton Mfg. Co., Jamaica Plain, Mass., manufacturer of rubberized clothing, tape, etc., has announced the appointment of Mrs. Helen Harvey as purchasing agent to take the place of Clifford A. Goodnough, resigned. General Manager N. Lincoln Greene is making a business trip through the western states.

The Peace Dale Braid Co., of which George P. Clark is president and general manager, has steadily grown since it was established ten years ago as a branch of the Columbia Narrow Fabric Co.'s mills at Shannock, R. I. There are now more than 100 operatives, and this number is being increased as additional machinery is installed. The company has recently installed twelve elastic looms in the new addition, the former Rocky Brook Mill, making a total of more than 42,000 square feet of area.

The Davol Rubber Co., Providence, R. I., is absolved by report of the State Factory Inspector of the charge of using cement containing benzene or benzol to the injury of employes. Several persons employed by the Davol company became ill and were thought to be poisoned by benzene. Samples of the cement were analyzed; the report indicated that petroleum benzene and not coal tar benzene or benzol is present in the rubber cement now being used by the concern.

The National India Rubber Co.'s factory manager Maurice C. Smith, Jr., announces that the Keds Division, Bristol, R. I., will operate on a five-day week schedule until further notice instead of five and a half days as for several months past. The change became effective immediately.

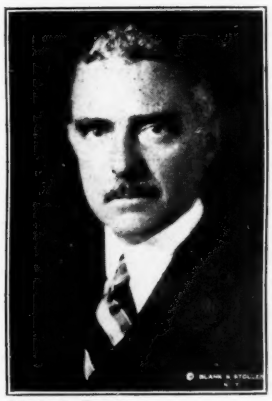
Farrel-Birmingham Elects Officers at Annual Meeting

At the annual meeting of Farrel-Birmingham Co., Inc., manufacturer of chilled rolls and heavy machinery, held at the general offices, Ansonia, Conn., on February 20, Franklin Farrel, Jr., formerly vice president, became chairman of the board, and N. W. Pickering was elected president to succeed Walter Perry. D. R. Bowen, chief engineer, Carl Hitchcock, formerly assistant secretary, Franklin R. Hoadley, manager of the Foundry Department, and A. G. Kessler, manager of the Buffalo Division, were elected vice presidents. Officers reelected were Alton Farrel, treasurer; G. C. Bryant, secretary; F. M. Drew, Jr., and L. K. Blackman, assistant treasurers; and W. B. Marvin, assistant secretary.

THIRD IN NOTED RUBBER LINEAGE

To be the third of a generation of executives who have played a conspicuous rôle in the development of the American rubber industry would alone be a marked distinction for H. Stuart Hotchkiss, who recently resigned as chairman of the board of General Rubber Co. and its subsidiaries, and president of United States Rubber Plantations, Inc., and its subsidiaries. Mr. Hotchkiss, however, has not only carried on and expanded large inherited interests as a worthy son of a sire eminent in New England business life, and a grandsire distinguished as a pioneer in the American rubber trade, but he has also to his credit many notable industrial and patriotic services uniquely his own.

Born in New Haven, Conn., October 1, 1878, son of Henry Lucius Hotchkiss, and grandson of Henry Hotchkiss, who became a special partner in 1843 of L. Candee & Co., rubber shoe manufacturers, Mr. Hotchkiss is descended on his paternal side from Samuel Hotchkiss, who came to New Haven from England in 1638, and from John Prescott, who came from England to Massachusetts in 1640, and whose descendants included Col. William Prescott of Bunker Hill fame and William H. Prescott, the historian. On his maternal side were Thomas Trowbridge, who came to New Haven in 1638, and Noah Webster. His early education was received at Taft School and Phillips Academy, Andover, Mass. After graduating from Yale in 1900 with the degree of Ph.B., he entered on January 1, 1901, the cost department of L. Candee & Co., of which his father was president, and later became secretary, treasurer, and vice president.



Blank & Stoller

H. Stuart Hotchkiss

In 1914 Mr. Hotchkiss was elected vice president of General Rubber Co., and in 1917 was chosen president, remaining in that position until 1928, when he was elected chairman of the board. He was president of United States Rubber Plantations, Inc., from 1919 to 1930. In April, 1917, while president also of the Naugatuck Chemical Co., he was appointed on a notable committee by the United States Government to supervise production of war materials, serving as chairman of the committee on rubber, U. S. Council of National Defense, and subsequently resigning this position and that of president of General Rubber Co. to accept a commission as captain in the U. S. Signal Corps. Later he was given the rank of major and served as assistant chief of inspection, equipment division; as senior assistant military attaché, American Embassy, London; saw active service with the A. E. F. in France; and was later made chief of raw material production, Bureau of Aircraft Production, Washington, being discharged from service in 1919 with the rank of lieutenant colonel.

While having an intimate knowledge of every branch of the rubber industry, Mr. Hotchkiss is particularly familiar with crude rubber. While chairman of an R. A. A. committee in 1917, he was instrumental in drafting the first uniform crude rubber contract to protect importer, manufacturer, and dealer. In 1916 he was elected first vice president of the R. A. A. and was chairman of a special committee in 1923 which invited representatives of the British rubber planting industry to come to the United States and to iron out the difficulties of producers and consumers.

Mr. Hotchkiss' business activities include directorships in the Chatham Phenix National Bank & Trust Co. of New York, New Haven Gas Light Co., Union & New Haven Trust Co., Dominion Rubber Co., etc. He has long been chairman of the rubber group of American Red Cross, is a fellow of the Royal Geographical Society, London, and a councilor of the American Geographical Society. Among his clubs are the University, Lotus, Yale, and St. Anthony, New York City, and the Country and Graduates Clubs, New Haven. He is a Republican, Congregationalist, and a 32nd Degree Mason.

Mrs. Hotchkiss was Miss Elizabeth Wyndham Washington. The couple were married in 1907 and have four children. Their town home is at 55 Hillhouse Ave., New Haven, Conn., and their country home, "Wyndham," is at East River, Conn.

Nat'l Association of W. M. D.

Carlton B. Overton, of Castle & Overton, Inc., New York, N. Y., was elected president of the National Association of Waste Material Dealers, Inc., at its annual meeting on March 19, 1930, in the Hotel Astor, New York. Mr. Overton succeeds Henry Lissberger, president of the association for the last two years.

Directors elected for two-year terms were George H. Bangs, Louis Birkenstein, David Charak, H. H. Cummings, George B. Doane, Ben Friedman, Maurice Goldstein, Albert T. Hicks, E. G. Jarvis, J. S. Katz, J. M. Maher, Herman Muehlstein, J. W. Paterson, R. W. Phillips, and Ivan Reitler, while E. E. Oury and Walter Schoenbach were elected directors for one year.

Scrap Rubber Division

At the annual meeting of the Scrap Rubber Division there was an informal discussion of various trade matters. David Feinberg, of Boston, Mass., was reelected chairman for the ensuing year.

EASTERN AND SOUTHERN

Dr. A. A. Somerville, vice president of R. T. Vanderbilt Co., Inc., New York, N. Y., will sail on the *S. S. Berengaria* on April 22 for a business tour of Europe lasting several weeks. His itinerary includes visits to England, France, Italy, Belgium, Germany, Sweden, Latvia, and Russia.

While abroad, Dr. Somerville will speak on new developments in the physical testing of rubber: before the Institution of the Rubber Industry at Birmingham on May 1 and at London on May 5; before a special rubber "soirée" at Paris on May 16; and before the Deutsche Kautschuk Gesellshaft at Frankfort on June 16.

Spadone Machine Co., Inc., 15 Park Row, New York, N. Y., announced the addition of a hose making machine to its line of rubber factory equipment. This new development will make hose in continuous lengths in all popular diameters.

John C. Treadwell, the well-known rubber planting expert, returned last month from a special visit to the rubber districts of the Orient and Philippines. Mr. Treadwell has renewed his association with John E. Jackson, chemical engineer, 72 Washington St., New York, N. Y.

Castle Rubber Co., Butler, Pa., is erecting a factory and power house in the East Butler district. The factory will be 324 feet long and 72 feet wide; while the power house will measure 36 by 40 feet. The plant will be ready for occupancy about June 1. N. E. Brown, secretary-treasurer of the Castle company, which manufactures mechanical rubber goods, states that the firm will make several new items this year. As business conditions look very bright, the company expects to increase its sales another 50 per cent. It has been experiencing such a yearly increase ever since its organization in 1923.

New York Rubber Corp. and its affiliated company, The Beebe-Porghesse Corp., Beacon, N. Y., have taken from the Prudential Insurance Co. of America, Newark, N. J., a group life insurance policy for the protection of 203 employes for a total of $242,000. Each worker receives protection of from $1,000 to $3,000, according to rank or position held. This insurance is given to them without cost, for the employing organizations assume the entire expense.

Frank H. Naylor, executive of the Columbus, Ga., plant of the Bibb Manufacturing Co., maker of tire fabric, notes decided improvement in textile business conditions in his immediate section.

"Business is a great deal better," he says. "We are running all the machinery in the mill on a longer schedule and some departments are in operation the full week."

He compared the present schedule of the company with that of two weeks ago and noted an increase of 33 1-3 per cent in that period.

Thomas A. Edison in a recent interview at Fort Myers, Fla., where he is conducting his rubber experiments, said, "Give me five more years and the United States will have a rubber crop which can be utilized in less than twelve months' time.

"Right now I am working on machinery to extract commercial rubber from goldenrod. When the machinery is ready, we will start large-scale planting. Goldenrod is a wonderful plant. We have discovered a variety that grows ten feet above a man's head, but by cross-breeding we will produce a plant carrying 8 per cent fine-grade rubber. That will be practical for an emergency crop."

United Carbon Co., Charleston, W. Va., manufacturer of Kosmos, Dixie, and Triangle brands of carbon black, has, besides its New York, N. Y., sales office, 230 Park Ave., several plants throughout the South. The Louisiana units are located at Cargas, Swartz, Crowboro, Dewdrop, Bastrop, and Hatchers Spur. Those in Texas are at Borger, Stinnett, and Sanford. In addition, the company maintains plants in Montana and Utah.

Wishnick-Tumpeer, 251 Front St., New York, N. Y., manufacturer and importer of carbon blacks, has announced that R. W. Sanford has joined its staff. He is a graduate chemist with considerable experience in rubber compounding, having spent the past four years with The B. F. Goodrich Rubber Co., Akron, O., as chemist and rubber compounder. His headquarters are at the plant of the Wishnick-Tumpeer subsidiary, Century Carbon Co., Monroe, La., where he will engage in research on the application of Disperso carbon black to rubber compounds.

Callaway Mills, Inc., 345 Madison Ave., New York, N. Y., manufacturer of special fabric for the rubber trade, has reported a change of address for its Atlanta representative: Harry W. Callaway, 1308 Rhodes-Haverty Bldg., Atlanta, Ga.

Bedford Tire & Rubber Co. stockholders, Bedford, Va., recently were advised of a plan for putting the business on a strong financial basis and opening the plant for production at an early date. It is proposed that each stockholder relinquish a third of his stock to be sold to a New York firm, netting the tire company about $250,000 to be used for operating capital.

The United States Rubber Co., Tire Department, Detroit, Mich., announces the opening of a new district sales office in Raleigh, N. C., which will control local branches in Charlotte, Greensboro, Wilson, Asheville, Greenville, and Columbia. It will be headquarters for the full line of United States tires, including the latest improvements in heavy service equipment. A native of Raleigh, Allan M. Leach, has been appointed district manager in charge of this office. Mr. Leach has been employed by the rubber company for the past ten years. Recently he was a special representative of the Motor Coach and Cab Division with headquarters in Detroit. Six years previously he was manager of the local branch in Raleigh.

Westinghouse Salute to the Rubber Industry

The Westinghouse Electric Mfg. Co., East Pittsburgh, Pa., paid tribute to the rubber industry in a broadcast through the National Broadcasting Co. over a network of thirty-two stations extending from coast to coast on March 11 from 10:00 to 10:30 P. M., Eastern Standard Time.

A brief resumé of the discovery of rubber and its further development in the advancing years was given. Interpolated was an appropriate vocal and orchestral program; the chorus consisted of twelve male and ten female voices.

Samuel Woolner, Jr., president of the Rubber Manufacturers Association, Inc., as guest speaker, in a short talk told of the use a man makes of rubber in the course of a day. He starts in the morning with the rubber stopper for his tub; then on his way to the office in his car, which is equipped with rubber tires, he encounters telephone and telegraph insulated wires, the fire department, trolley cars, hospitals, tennis courts, etc., all of which use rubber. In the office, he has also many uses for rubber, such as erasers, rubber bands, hard rubber ink-well covers, and he even signs his name with a hard rubber pen. Mr. Woolner concluded with the statement that man uses rubber from the time he is born, when he is nourished by a rubber nipple, on through the declining years of his life.

Samuel Woolner at the Microphone

Schrader's President and General Manager

In recognition of his managerial ability and as fitting tribute to his outstanding efficiency William T. Hunter, formerly vice president and general manager, was elected president and general manager of A. Schrader's Son, Inc., Brooklyn, N. Y., maker of tire pressure gages and valves. He became associated with the organization in June, 1899, and as his capability manifested itself, promotions resulted. In 1910 he was made director, secretary, and assistant treasurer. He rose to the rank of general manager by 1922 and to the vice presidency two years later. In January, 1930, he was elected to his present position.

W. T. Hunter

Mr. Hunter serves also as a director for A. Schrader's Son, Inc., and Scovill Mfg. Co., Waterbury, Conn., which recently acquired the former concern. He is included in the directorates of the East Brooklyn Savings Bank, the Brooklyn Y. M. C. A. and Y. W. C. A., and the Brooklyn Museum of Arts and Sciences. He acts, too, on the advisory board of the (Brooklyn) Irving Trust Co.

Schrader's new chief executive was born in Portland, Conn., on August 25, 1880. He was educated in the Brooklyn public schools. Mr. Hunter may be reached at 470 Vanderbilt Ave., Brooklyn, N. Y.

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du Pont Buys R. & H. Chemical Co.

E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., announces acquisition of the entire assets and business of the Roessler & Hasslacher Chemical Co., New York, N. Y., if the stockholders of the chemical company, at a special meeting called for the purpose, ratify the agreement for the purchase. It is the intention to continue the chemical company's activities as heretofore and to incorporate a new company for this business, retaining the Roessler & Hasslacher name.

PACIFIC COAST

Pacific Goodrich Rubber Co., Los Angeles, Calif., reports steady improvement in sales, and sees an excellent prospect for the late spring. It has just appointed as Miller and Hood tire sales manager for the entire western field J. J. O'Connor, long Pacific Coast District Manager for Hood Rubber Products Co., with headquarters at 450 Ninth St., San Francisco. With General Sales Manager Frank E. Titus, Mr. O'Connor is now completing a three weeks' trip throughout the entire territory. The company on March 15 celebrated at the factory the second anniversary of the completion of the first tire; a dance of the employes took place in the evening, which company executives attended.

Goodrich Silvertown, Inc., now has forty well equipped distributing stations in the western field, and all the managers had an annual mid-March conference at the factory, some sixty persons being guests of the company. Recent visitors from the parent Goodrich plant in Akron, O., included Assistant Secretary W. D. Eakin and V. A. Caslar and L. D. Moffatt, executives of the mechanical division.

The Patterson-Ballagh Corp., Los Angeles, Calif., maker of rubber products for the oil industry, is making golf balls in a temporary factory at 6325 Wilmington St., but plans are being made for a large modern plant. The product is of the new type 1 6-8, named "El Sol," and in quality is said to vie with the best.

Firestone Tire & Rubber Co. of California has nearly finished installing the mechanical equipment in the addition to the Los Angeles plant, but it will be a couple of months before the additions will be operating. Meanwhile production is being increased, output going well over the daily average of 6,500 tires and 6,000 tubes. The factory was originally equipped for 5,000 tires daily; the extensions will give it a capacity of 15,000 a day.

The Xylos Rubber Co., Firestone subsidiary, which has its large reclaiming plant adjoining the tire works, is operating at near its capacity. Homer G. Allen is the new manager. He comes from Akron, O., and succeeds W. H. Funston, Jr., who has returned to the parent Firestone concern in Akron.

Lee Tire & Rubber Co. sales in the Pacific Coast territory are said by J. J. Pie, San Francisco, Calif., branch manager, who recently returned from an extensive trip through the field, to be improving remarkably. It is said that sales for the quarter ending February 1 were over double those of the same period the year before.

Gray & Danielson Mfg. Co., manufacturer of insulated wire, has moved to 2101 Bryant, corner 19th St., San Francisco, Calif.

Goodyear-Zeppelin Corp. plans for a combined mail and passenger airship service across the Pacific are already well matured, according to V. R. Jacobs, assistant manager of the aeronautics department of the Goodyear Tire & Rubber Co. and assistant sales manager of the Goodyear-Zeppelin Corp., Akron, O., who was a recent visitor on the Pacific Coast. Actual operation will be carried on by the Pacific Zeppelin Transportation Corp., a subsidiary of the Akron concern. The delay in the initiation of the trans-Pacific air service is the parent company's government contract which requires the building of two giant airships for naval service before it can begin the construction of ships for commercial service. Tentative plans provide for making the commercial ships about the same size as the naval craft, or of 6,500,000 cubic feet, as compared with the 3,710,000 cubic feet of the "Graf Zeppelin."

Pioneer Rubber Mills, San Francisco, Calif., reports that business in the past month has improved and sales prospects in the domestic and foreign fields are very encouraging. The factory at Pittsburg, Contra Costa Co., Calif., is being run on full time, and production will be speeded up in all lines within a few weeks.

General Tire & Rubber Co., Akron, O., has been holding a series of dealers' conferences in the west coast field. The first was held at Seattle, Wash., under the auspices of Branch Manager Roger Morgan; the second at San Francisco, Calif., conducted by Branch Manager Roy Doss; and the third at Los Angeles, Calif., arranged by Branch Manager W. F. Lynch. At each assembly talks were given by General Sales Manager F. Sam Poor, Sales Promotion Manager L. Harvey, and Frank Gable of the factory engineering department in Akron, and Dan A. Kimball, western district manager.

The State of Oregon will after July 1 forbid the running of any trucks or other commercial vehicles with any but pneumatic tires. Since January 1 all vehicles having a combined load of over 18,000 pounds have been forbidden to run on solid tires within three miles of any city limits.

Falls Rubber Co., Akron, O., reports that President W. P. Cline plans to make an extended personal survey during April of business conditions on the Pacific Coast. Sales are reported to show a marked improvement of late throughout the entire field.

The Pennsylvania Rubber Co. of America, Inc., Jeannette, Pa., is meeting with an encouraging response from independent tire dealers on the Pacific Coast, to whom it offers the advantage of buying direct from the factory and of having protected territory. It is stated that sales are well above those for the first quarter of 1929, and the growth is steady and substantial.

Willard Storage Battery Co. is operating its newly opened factory at E. Ninth and Gerhart Sts., Los Angeles, Calif., slightly under its 2,000-a-day capacity,

but indications are that the output will be increased rapidly in a few weeks. About 25 per cent of the batteries produced are of the threaded-rubber insulator bone-dry type and the remainder are of the standard wood-insulator kind.

Samson Tire & Rubber Corp. expects to have the interior of the administration building at the new plant in Los Angeles, Calif., finished within a couple of months, and then to be able to move the executive offices from the crowded quarters at E. Eighth and Crocker Sts. Meanwhile tire production is steadily rising, three shifts being required in some departments.

Kirkhill Rubber Co., 5801 S. Hoover St., Los Angeles, Calif., is still extending its busy plant, one of the most unusual on the Coast, turning out some 533 standard mechanical rubber articles and nearly 1,700 customer rubber specialties.

T. J. Barker Rubber Co., 1346 E. Slauson Ave., Los Angeles, Calif., is one of the newer rubber concerns which is providing much camelback and other material for the tire repair trade. The manager is Mr. Barker, and the equipment is very up-to-date

Kenyon Tire & Rubber Co. products will be distributed hereafter under a new plan from the Coast headquarters, 898 Van Ness Ave., San Francisco, Calif. which is being enlarged to meet extra demands. Last month the Kenyon warehouses in Tacoma, Seattle, and Portland were disposed of, and all the stock centered at Portland for direct sale.

W. J. Voit Rubber Co., Los Angeles, Calif., has by reason of extensions made to its factory, moved its office from 1604 E. 26th St. to 2616 Nevin St. Recent mechanical additions to the plant included six presses and a tuber. The company recently engaged as a technical expert I. W. Robertson, for eleven years with the Miller Rubber Co., Akron, O. Among the products are beach balls, repair material, and sponge rubber specialties.

The Bristol Co., Waterbury, Conn., manufacturer of recording instruments, has opened a new sales and service office in Los Angeles, Calif. S. W. Case has been appointed district manager, and W. H. Rogers sales and service engineer. Both men are capable engineers having several years' experience in the use of recording, indicating, and control instruments, particularly in industrial applications.

C. W. Eddy, of the chemical staff of The B. F. Goodrich Co., Akron, O., resigned recently to join the United States Bureau of Chemistry and Soils, Food Research Division, Los Angeles, Calif.

Automobile Production

February production (factory sales) of motor vehicles in the United States, as reported to the Department of Commerce, was 323,962, of which 275,811 were passenger cars, 47,129 trucks, and 1,022 taxicabs, as compared with 273,170 passenger cars, trucks, and taxicabs in January and 466,418 in February, 1929.

MIDWEST

United States Rubber Co. Tire Department Activities

L. M. Simpson, general sales manager of the Tire Department, United States Rubber Co., Detroit, Mich., has announced the following appointments: J. R. McCoy and J. E. Hicks as district managers of tire sales at Philadelphia, Pa., and Baltimore, Md., respectively. J. C. Koffman, formerly assistant manager of the Chicago, Ill., district offices and active in that territory for fifteen years, has been made manager of the Milwaukee, Wis., district. Matt. J. Herold, well-known in the automotive industry, having been connected with it for the past ten years, most recently as Southeastern Division district manager of Graham-Paige Motors, has been appointed special representative of the Motor Coach and Cab Tire Sales Division in the Northwest Region, with headquarters in Chicago. Chester J. Pike, for fifteen years manager of the Springfield, Mass., branch, has been transferred to Birmingham, Ala., as district sales manager of tire sales covering the entire state.

According to William C. Blake, manager of Motor Coach and Cab Tire Sales, Robert R. Shaw has been made Service Supervisor of Motor Coach and Cab Tire Sales. He has been engaged in the automotive and the tire industries for the past twelve years.

G. N. Walker, advertising manager of the Tire Department, announces the appointment of C. M. Hammond as assistant advertising manager. Mr. Hammond was recently in charge of Dealers' Cooperative Advertising and Sales Promotion. Previous to that he was regional sales promotion manager for the Chevrolet Motor Co. Mr. Hammond has been connected with the automotive industry for the past ten years. He is a native of Detroit and was educated in the schools of Michigan.

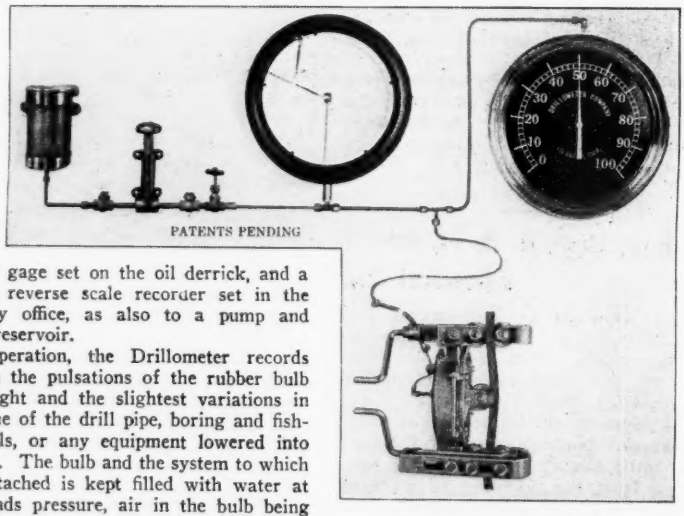
The recent annual conference between field representatives of the Technical Service Division and home office officials, held at the Detroit plant, was under the active direction of A. K. Dill, Technical Service manager, and his staff. Every pertinent phase of work was carefully considered and open dis-

RUBBER AIDS DEEPEST DRILLING

LARGELY to a device known as a Drillometer, the vital part of which is a large flattened rubber bulb, is attributed the successful drilling of the deepest oil-well boring in the world, Shell Oil Co.'s Nesa 11 at Signal Hill near Long Beach, Calif., which was down 9,900 feet on November 13. The bulb is set in a metal case which is attached by means of rollers to the steel drilling cable or dead line, and from the front a concaved wheel presses against the cable. In the rear, rubber tubing leads from the bulb to a water line, which in turn is also connected with a 12-inch drillers' gage set on the oil derrick, and a 10-inch reverse scale recorder set in the company office, as also to a pump and small reservoir.

In operation, the Drillometer records through the pulsations of the rubber bulb the weight and the slightest variations in the same of the drill pipe, boring and fishing tools, or any equipment lowered into the well. The bulb and the system to which it is attached is kept filled with water at 10 pounds pressure, air in the bulb being first allowed to escape through a vent valve. The primary object of the device is so to control drilling that a straight hole (instead of one describing perhaps a circle or spiral) is assured and drilling hazards minimized. The rubber bulb type is said to be very much more sensitive than the older diaphragm type of indicator for feeling out the progress of boring.

The bulb is made of a quality of rubber ranking between a tube and a high-grade tread stock with a tensile of about 4,500 pounds and sheeted to ⅛-inch. It is full molded with the front center section steam-spliced to the bulb.



The Eyes of the Driller

cussions featured the various business sessions. Particular stress fell upon the subjects treated in the new "U. S. Heavy Service Tire Manual and Changeover Guide." At the conclusion of the six-day session Mr. Dill took his field men to the G. & J. Tire Co. plant, Indianapolis, Ind., a subsidiary of the United States Rubber Co., where two additional days were spent acquainting the field men with new processes and developments in the manufacture of tubes, airplane, bicycle, and carriage tires.

The employes of the Tire Department are holding an informal party on the evening of April 1 in honor of R. A. Johnson. On that day, he will have spent thirty years in the tire organization of the company, for he started work as an office boy in the Hartford Plant on April 1, 1900. Later he held various clerical positions in the factory and finally was placed in charge of the Billing Department. In 1921 he was transferred to the Comptroller's Department in the New York Office and worked under W. O. Cutter. In 1929 he came to Detroit to take charge of the Statistical Department of the Tire Control Division under Noble Ashley.

A. S. T. M. Meeting

The American Society for Testing Materials held a regional meeting at Detroit, Mich., March 17-21, 1930. At the session on March 19 an important paper was read by Walter C. Keys, Chief Engineer, Automotive Development Department, United States Rubber Co., Detroit, Mich. This paper on "Advances in Rubber for the Automotive Industry" was a contribution to the general symposium, and set forth the value and function of rubber employed in sixty-five different applications in automobile construction. A summary of Mr. Keys' paper follows:

Vulcanized rubber is unique among materials of construction. It resembles a liquid in that it is almost non-compressible. It resembles a gas in that work done on it is converted partly into heat.

Although rubber has been used for automobile tires from the beginning, the automotive industry has only recently really "discovered" rubber as a structural material. Sixty-five specific uses to which rubber is now being applied in motor vehicles are enumerated in this paper. These include parts for absorbing and dampening vibration, for deadening noise, for eliminating metallic joints or protecting them, for electrical insulation, for protecting parts against wear, and the like.

Rubber is now being vulcanized to other materials, such as metals and wood, and rubber latex is being used for impregnating porous materials, such as paper. An insulation rubber that will not tarnish silver, and a pile carpet made by attaching the fibers to the backing fabric with rubber are interesting new developments in the application of rubber to the motor car.

Much is still being learned about the physical properties of rubber. Rapid advances are accordingly being made in the application of rubber to new services, and it is to be expected that the usefulness of rubber to the motor car will still continue to be extended largely.

Detroit Meeting of Committee D-11

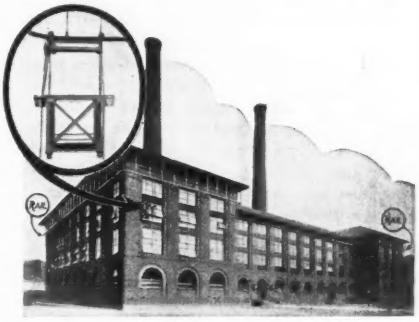
Committee D-11 on Rubber Products held a very successful meeting at Detroit, Mich., March 18 and 19, in connection with the Spring Group Meeting of A. S. T. M. Committees. The meeting was in charge of C. R. Boggs, vice president of the Simplex Wire & Cable Co. W. B. Wiegand, of Binney & Smith Co., was elected chairman to fill the vacancy created by the resignation of L. C. Conradi. A. W. Carpenter, The B. F. Goodrich Co., who is also secretary of the committee, was appointed chairman of Sub-Committee X on Standard Procedures for Testing Rubber Products, and F. D. Abbott, Firestone Tire & Rubber Co., was appointed chairman of Sub-Committee XVII on Rubber Products for Absorbing Vibration.

An extensive test program designed to work out a standard method for testing flow under compression of rubber products used to absorb vibration is in progress. Preliminary data was presented and provided much interest and considerable discussion.

National Safety Council announces that its offices were moved on March 1 from 108 E. Ohio St., Chicago, Ill., to the Civic Opera Bldg., 20 N. Wacker Dr., Chicago.

Cleaning Factory Windows

MODERN buildings for manufacturing purposes are virtually walled in with glass to admit the greatest amount of sunlight. The economic advantage of daylight is undisputed when the windows are kept properly cleaned.



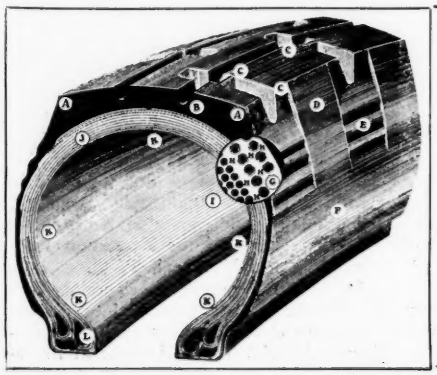
Tramrail Window-Washing System

When cleaning is neglected, layers of soot and encrusted scale gradually accumulate until the transparency of the glass is lessened. At this point spoiled products and accidents are liable to occur.

The cost, danger, and difficulty involved in window washing with scaffold and rigging are the real reasons for the poor light that so many factories supply their workmen today.

The illustration represents a new system for window cleaning by which sunlight illumination can be economically maintained in full effect. This comprises the use of a tramrail permanently attached outside the wall of the building just above the top level of the sashes. Suspended from this rail, which completely encircles the building, is a platform stage movable by trolleys along the face of the wall. Secure upon this stage, men can properly clean the windows as they lower the stage level by level until the ground level is reached. Cleveland Electric Tramrail Division of the Cleveland Crane & Engineering Co., Wickliffe, O.

Claude Platt, manufacturer's representative of The Fisk Rubber Co., with headquarters in Detroit, Mich., has resigned. He has been identified with the Fisk company for twenty-three years, except for a short period selling motor cars in Chicago, Ill.



United States Rubber Co. Royal Heavy Service Tire

A to A—*Profile*—Uniform tread wear and load distribution.

B—*Deep Tread Grooves and Large Blocks*—Insure long and anti-skid life. Thick rubber *below* non-skid adds thousands to the mileage.

C to C to C—*Straight Line Traction*—Much more effective than irregular or curved lines.

D—*Heavy Buttresses*—Reenforce tread shoulders. Give added traction in mud and snow. Also additional sidewall protection.

E—*Heavy Circular Ribs*—Insure extra resistance against rut and curb wear.

F—*Thick Tread — Rubber Sidewall* — Gives complete protection and long life to carcass.

G—*Double Cord Breaker (Magnified Section)*—Thickly incased in Usconite. Cushions and distributes road shocks equally over carcass. Insures better bond between tread and carcass.

H—*Usconite Rubber Compound*—Dissipates and resists heat without breaking down. Strongly adhesive—prevents separation of tread and carcass.

I—*Latex Treated Web Cord (Magnified Section)*—Note even-lying cords with absence of trouble-causing cross-threads.

J—*Latex Treated Web Cord*—Maximum strength and flexibility.

K to K to K to K to K—*Circular Carcass Contour*—This natural shape minimizes internal stresses. Reduces possibility of ply separation and other carcass failures.

L—*Multiple Bead Construction*—Reduces heat accumulation. Distributes stresses uniformly in bead structure.

U. S. Tire Retailer.

CANADA

The samples offered by manufacturers of rubber footwear this season show a trend towards simplification of the lines and a reduction in the range of colors, patterns, and materials, as compared with last season. This policy will meet with approval of the retail trade as it should result in faster turnover. With the style interest concentrated upon a restricted range of types, the retailer's problem should certainly be less difficult. A slight advance in prices has been announced; this should have a stabilizing effect as the price of rubber footwear has been too low.

Attention in galoshes is centered on the two standard patterns, slide fastener and dome fastener, manufactured on three or four lasts in three or four heel heights. It is expected that brown will be the leader in the all-rubber article. The carriage boot type of galosh is regarded as an important item, and will sell at a higher figure than during the past season.

In certain sections of the Dominion retailers are in rather a rebellious mood respecting rubber footwear, and they are likely not to stock up beyond a reasonable amount each year. If the season develops a demand larger than they can take care of, the consumer will have to get along as well as he can. The manufacturers, of course, will produce only in accordance with their placing orders, and if the retailers carry out their threat, and anything like a normal season comes in the fall and winter 1930-31, there is danger that rubber footwear will be scarce a year from now.

We were recently told of a live wire Western Ontario hardware merchant who sold considerable garden hose during zero weather in January and other months during the past winter. It transpired that he went after motor-car owners and sold them twelve feet of garden hose with which to wash their cars; others to flood skating rinks for children; and others to fill the evaporation tanks in their furnaces, for the average man objects to carrying water in a pail, preferring to connect the hose to a tap in the cellar and thus fill the furnace water tank with the least effort.

Canadian Goodrich Co., Ltd., Kitchener, Ont., E. S. Sargeant, vice president and general manager, has recently announced several important changes in the executive personnel. I. G. Needles, assistant to the general sales manager for the past four years, has been made sales manager of the Tire Division, in charge of tire sales and branch personnel. A. J. Minister, with Goodrich since 1925, has been made sales manager of the Footwear Division. G. R. Donaldson, formerly Vancouver, B. C., district manager, has been transferred to Toronto as district manager. H. L. Mullett, who for many years has been one of the star salesmen of the Vancouver, B. C., branch, will succeed Mr. Donaldson as district manager there. A. Koehler, formerly general sales manager resigned. So has W. W. Atkinson, formerly Toronto district manager. R. C. Groffmann has been appointed advertising manager of that company. He has a wide experience advertising Goodrich products, having been one of their former district advertising managers. He will be in charge of both tire and footwear advertising at Kitchener.

J. Walter Thompson Co., Ltd., of Montreal, has been designated advertising agents of the Canadian Goodrich company.

Mr. Sargeant states also that he regards 1930 as one of bright prospects in tire and footwear branches of Canadian industry, as "Present indications point to a possible reduction in the volume of original tire equipment business over 1929, which was an exceptional year, but for this very reason the replacement market gives greater promise." In footwear new Goodrich styles will shortly be announced, and there is every indication that sales will reach new levels during the coming year.

Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont., reports good demand and inquiries from all parts of Canada for Goodyear air wheels for airplanes. The general outlook in this direction is considered most promising. It is stated that Goodyear sales during the first four months of the current fiscal year are slightly less than for the corresponding period last year. The reduction in profits has not been proportionately so large as in sales. The New Toronto plant is operating three shifts, but not at full capacity. Considering prevailing conditions, results so far this year are regarded by the management as gratifying. Bad roads, due to heavy snowfalls, have been a factor in reducing sales of tires; while the tie-up in the movement of grain in Western Canada has been another adverse influence.

The entire sympathy of the trade is being extended C. H. Carlisle, Goodyear president and general manager, on the recent death of his wife at Miami, Fla., U. S. A.

North British Rubber Co., Ltd., Edinburgh, Scotland, through N. E. Davidson, manager of its Canadian branch at Toronto, Ont., announces a new number, a lightweight fisherman's wader, which he predicts will be a great seller.

Holtite Rubber Co. of Canada, Ltd., Drummondville, P. Q., has been incorporated with 12,500 class "A" and 2,500 class "B" shares of no par value.

F. P. Baker has recently been appointed sales manager of the Woodstock Rubber Co., Ltd., Woodstock, Ont. He has twenty years' experience selling footwear, both rubber and leather, and during the last three years had been with the Northern Rubber Co., Ltd., and for seven years previous with the Dominion Rubber System. Mr. Baker will have associated with him the following direct factory representatives covering the province of Ontario: Art Sykes, Hamilton; Tim Healey, London; Spike Knechtel; Jack Jewiss, Toronto; Harry McIvor, Woodstock. This company has established branches at Ottawa, Winnipeg, and Montreal.

F. Longdon & Co. (Canada) Ltd., manufacturer of Elinstar knitted elastic products, has moved to 626-28 King St., W., Toronto, Ont., where larger quarters permit better handling of business.

Trafalgar Rubber Co., Ltd., Toronto, Ont., has been granted a Dominion charter with a capitalization of $100,000.

Ames Holden McCready Rubber Co., Ltd., Montreal, P. Q., has appointed two new branch office managers. J. C. Moffitt, associated with the firm for the last ten years under the late F. A. Richardson, will become manager of the Vancouver, B. C., branch. T. M. Murphy succeeds W. M. Angus as manager of the St. John, N. B., branch. Mr. Murphy has fifteen years' service with this house. Mr. Angus recently resigned after being connected with the company for thirty years.

Frederick Arthur Richardson, 54, manager of the Vancouver, B. C., branch, passed away recently in the Vancouver General Hospital. He had been associated with the shoe and rubber trade of the Dominion for almost forty years.

Miner Rubber Co., Ltd., Granby, P. Q., has opened a new distributing warehouse at 9-13 Canterbury St., St. John, N. B., where it will carry a stock of rubber and canvas footwear and rubber clothing in order to give satisfactory sorting service to its increasing clientele in New Brunswick. J. H. Codner, in charge of Maritime sales, with headquarters in Halifax, will also be in charge of the new branch. This company also maintains branches at Halifax and Sydney, and the addition at St. John is the third through which service will be given to Maritime province customers. Jack McKimmie now represents the Miner company in Cape Breton Island. Al Phillips, who joined Miner recently, will cover part of New Brunswick province.

W. H. Miner, president, and T. Y. O'Neill, sales manager, have recently returned from a trip to Winnipeg, Man., where sales conferences were held with Miner's western representative, Congdon Marsh, Ltd.

W. A. Eden Challenge Hockey Trophy was competed for in the Mount Royal Arena on March 11 between teams representing Columbus Rubber Co. of Montreal, Ltd., and the Montreal branch, Dominion Rubber Co., Ltd. The match was a draw; each team scored 2 goals. This trophy is played for annually, and was donated by Mr. Eden, president of the Dominion Rubber Co., Ltd., Montreal, P. Q.

H. W. Blahout, of the Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., was elected treasurer of the Canadian Industrial Traffic League at its recent annual meeting.

The Rubber Industry in Europe

GREAT BRITAIN

Tapping Holiday in May

The proposal to stop tapping during the whole of May, which has the support of the Rubber Growers' Association, is apparently looked upon with favor by producers, for although April 8 has been fixed upon as the date when all assents must be in, by March 8 about 160 British companies, including a large number of well-known firms, had already announced their full agreement with the proposal. News from Holland indicates that here too a very large number of producers have already agreed to the plan.

According to the *Financial Times*, the intensive propaganda and careful explanation of the significance of the Anglo-Dutch proposal for a rubber tapping holiday in May are meeting with good response from the Asiatic rubber producers in Malaya. At largely attended and fully representative meetings of the Asiatic Planters' Association held in Kuala Lumpur, and of all the Asiatic producers in Malacca—where they control a larger area than elsewhere in the peninsula—resolutions supporting the scheme were enthusiastically adopted. One large producer stated that the Asiatics might even agree to restrict one month in every six months until the price had improved.

At a general meeting of the Planters' Association of Malaya held on March 5, it was unanimously resolved strongly to urge the scheme. While Ceylon had at first objected to stopping tapping in May as that month was unsuitable because a resumption of tapping in June would be impossible owing to the monsoon, later cables indicate that despite a lack of unanimity, the Ceylon Estates Proprietary Association has decided to support the scheme and stop tapping in May. The plan may extend to Burma, for a cable received by the Rubber Growers' Association from the Planting Committee of the Chamber of Commerce states that estates in Burma will be circularized and advised to adopt the plan.

British Industries Fair

As usual the British Industries Fair, which closed on February 28, was held in two sections, one in London and the other in Birmingham. A variety of rubber articles was again shown, although tires and other automobile accessories of rubber were not on view. In London, sporting goods, next to the Rubber Growers' Association exhibit, attracted most attention, while in Birmingham technical goods and machinery were of first importance. About 38 British manufacturers supplied the large variety of articles made wholly or partly of rubber that were displayed in the Rubber Growers' Association section.

Among the novelties shown was a new type of carpeting with moquette top and backing of sponge rubber. Cutlery with hard rubber handles simulating ebony and stag's horn, a rubber-tired milk-churn, rubber-lined refrigerator, rubber printing plates, and sponge rubber kneeling mats for churches—for which propaganda is planned—further attracted attention. From Canada came a toilet seat composed of alternate layers of wood and rubber, the whole being completely covered with ebonite; finally there was a novel device for steadying furniture and machinery, etc., in which a rubber diaphragm plays an important part.

The McKenna Duties

A letter has been sent to the Right Hon. Philip Snowden, M.P., Chancellor of the Exchequer, and to the Right Hon. J. H. Thomas, M.P., Lord of the Privy Seal, by the India Rubber Manufacturers' Association, Ltd., stating that in the opinion of that body the removal of the McKenna duties on tires and automobiles would have a disastrous effect on both the British tire and automobile industries. At the same time, the engineering and chemical industries would suffer an adverse reaction in employment due to the decreased demand from the tire industry.

Protecting Aluminum Alloys

While aluminum alloys, due to their lightness, are of great importance in the automobile and aircraft industries, the rapidity with which corrosion takes place under certain conditions is a great drawback, and more or less expensive methods of protecting the metals have had to be used. However, as the *India Rubber Journal* learns, a new method consisting of coating the metal surface with a rubber compound has been tried within the last few months and is apparently giving promising results. Since the protecting cover is flexible and can distort without cracking and will further remain intact despite blows on the surface unless these have been sufficiently severe to cause major breakage, the advantages of this system are obvious. Six different methods of applying the rubber surface have been tested:

1. The application of pure rubber dissolved in naphtha and applied directly to the metal surface, and finally dressed with dry aluminum flake while the rubber solution is still tacky.
2. Mixing the rubber solution with aluminum flake and applying the compound as a paint.
3. The mechanical application of sheet rubber to metal, using solution as an adhesive.
4. Electro-deposition of rubber on the metal surface by the anode process, the complete unit subject to final vulcanization.
5. Spraying of latex on the surface and vulcanizing.
6. As No. 5, but with a cellulose finish obtained by the usual spraying apparatus.

As the journal in question points out, while the demands of the air craft industry for rubber are at present comparatively small, a satisfactory solution of the corrosion problem by means of the application of rubber to the metal would result in an immediate demand for rubber for covering metal wings and bodies.

Institution of Rubber Industry

Programs of meetings of the Institution of Rubber Industry have been scheduled as follows:

April 7, London. Paper by L. Lord. "Recent Developments in Budgrafting and Seed Selection with Rubber in the Dutch East Indies."

May 1, Birmingham. Paper by A. A. Somerville. "Some New Developments in the Physical Testing of Rubber."

May 5, London, Paper by A. A. Somerville. "Some New Developments in the Physical Testing of Rubber."

Diplomas were awarded to the following American chemists: C. R. Boggs, H. A. Winkelmann, and E. A. Grenquist.

Rubber in Engraving Granite

Where formerly weeks were spent in cutting by hand the designs and inscriptions on granite monuments, today the work is done by sand and compressed air. The smooth surface of the granite is covered with a mixture composed largely of rubber. This coating, about ⅛-inch thick, is allowed to dry, and the design which is to appear on the stone is cut out of the rubber, leaving the surface of the stone exposed. Then a stream of sand is driven on to the exposed surface by compressed air, and the hard stone is cut away, while the rubber is undisturbed. When the cutting is complete, the rubber coat is removed, and the design is revealed.

Sweden

Sweden's imports of crude rubber during 1929 were 3,920 tons against 2,393 tons in the preceding year. At the same time entries of rubber footwear were 342 and 272 tons respectively, and all other rubber goods, 4,305 and 3,833 tons, respectively. The exports are given as: old rubber, 431 tons against 629 tons and footwear 1,042 tons against 985 tons.

GERMANY

Imports 1929 and 1928

Imports and exports of raw and manufactured rubber for Germany during 1929 and 1928, recently published, show considerable increase in crude rubber consumption during the former year, amounting to about 30 per cent. The crude rubber imports were 530,953 quintals, of which 32,292 quintals were reexported, leaving 498,661 quintals retained in 1929. This compares with imports of 423,908 quintals, less reexports of 39,280 quintals, or 384,628 quintals retained in 1928. At the same time, gutta percha imports increased from 1,720 quintals to 1,828 quintals, balata from 5,463 to 6,697 quintals. The increase is to a large extent explained by the low prices prevailing during 1929.

Much to the chagrin of German rubber manufacturers, 1929 imports of manufactured goods have increased 17 per cent over the preceding year. However, the increase in exports of over 20 per cent more than made up for this. The total amount of goods imported in 1929 was 79,074 quintals, value 39,991,000 marks, against 67,959 quintals, value 38,328,000 marks in 1928. The most interesting feature was the remarkable increase in rubber footwear imports, which were only 752 quintals in 1928, but 2,704 quintals in 1929. This seems due to the invasion of the German market by Russian, Swedish, and Czecho-Slovakian producers, for in 1928, 452 quintals out of the total 752 quintals came from America, and the other sources are too unimportant to be mentioned separately. We now find that side by side with an increase to 660 quintals in the shipments from America, Finland sent 128 quintals, Latvia, 291 quintals, Soviet Russia, 413 quintals, Sweden, 457 quintals, and Czecho-Slovakia, 396 quintals.

Tire imports increased from 316,626 quintals in 1928 to 333,675 in 1929. Here American casings declined from 148,421 quintals to 138,106; while those from Italy rose from 44,284 quintals to 53,707; those from Belgium increased from 81,209 to 88,020 quintals; Soviet Russia again appears in the role of exporter, having shipped 6,692 quintals against nothing the year before.

Imports of inner tubes in 1929 rose to 257,917 quintals from 197,713 quintals in 1928. But inner tubes for bicycles fell from 266,752 quintals to 211,930; tires for bicycles also show a decline from 465,312 to 305,246 quintals. Imports of rubber thread were 3,526 quintals instead of 2,766; belting, 1,164 quintals instead of 1,264; and other soft rubber goods, 7,221 quintals against 6,316.

Rubber Exports

Total exports, including hard rubber goods, came to 227,990 quintals in 1929 against 189,696 quintals in 1928, valued at 115,287,000 marks and 131,679,000 marks respectively. Exports of hard rubber goods included in the above were 12,369 quintals, value 12,891,000 marks, in 1929, and 10,613 quintals, value 10,855,000 marks, in 1928. Increases were shown in tubes for motor vehicles: 250,762 quintals as compared with 166,465 quintals; covers for automobile tires, 301,339 against 180,193 quintals; covers for bicycle tires, 1,001,961 against 945,860 quintals; hose, 20,005 against 17,170 quintals; belting, 5,467 against 4,676 quintals; footwear, 3,623 instead of 2,686 quintals; and other rubber goods, 84,777 instead of 64,010 quintals. Decreases are to be noted in the exports of tubes for bicycles, 2,299,877 against 2,782,396 quintals; soft rubber dough, waste and reclaim, 6,058 against 13,934 quintals; tires for other vehicles, 13,388 against 17,908 quintals.

Rubber Backing for Silverleaf Plaster

In a recent issue of the *Gummi-Zeitung*, Rudolf Ditmar discusses the use of metal foils in treating wounds, and points out that the one drawback is the extreme thinness of this material, which makes it difficult to handle. This can be remedied by placing the foil on fabric coated with a rubber solution. In this way the effect of gold, silver, lead, zinc, or other metallic ointments could be attained directly and the unpleasantness of a metallic ointment avoided. The metal could also be applied to the rubber-coated fabric in the form of exceedingly fine grains or as metal dust by spraying. He suggests the following rubber solution: 50 parts by weight of pale crepe are thoroughly combined on a mill with 15 parts by weight of lanthanium carbonate $La_2(CO_3)3$. This gives a very sticky mass which is then dissolved in 300 parts (volume) of benzol. This solution is spread on the muslin, and in the case of silverfoil plasters the finished article can easily be sterilized at 110° C.

Detecting Cold Cured Goods

As a result of the development of modern accelerator technology, says the *Gummi-Zeitung*, warm vulcanization is becoming the established method for dipped goods and articles made of cut sheet, whereas the latter in particular were formerly cured by the sulphur chloride method.

This change is due to the superior aging qualities of the hot cured article even under adverse climatic conditions. A simple method for determining the type of cure is therefore interesting to exporters and dealers. In sulphur chloride vulcanization, rubber takes up sulphur and chlorine, which later on separates as hydrochloric acid. Chlorine is always present in cold cured goods and can be detected as follows: The end of a bit of copper wire is heated and then brought in contact with the rubber sample to be tested. A very small amount of rubber from the sample will adhere to the hot wire and if this is again heated in the colorless flame of a gas jet or alcohol burner, the flame takes on a distinctly green hue if there is chlorine present in the rubber.

Achema VI

The Achema VI will be held at Frankfurt a. Main, Germany, from June 10 to 22; at the same time the general meeting of the Society of German Chemists will take place. Ten years have passed since the first Achema was held in Hannover and in the meantime it has become of world-wide importance. A large number of chemists, engineers, builders of apparatus, and other chemical experts are expected to be present.

Besides the meeting of the Society of German Chemists and of the Dechema, the German Rubber Association, the Colloid Association, the Society of German Apparatus Constructing Establishments, etc., also will convene in Frankfurt a. Main. In four large halls, apparatus, machinery, instruments, and raw materials for various chemical industries will be exhibited.

Russia

A new trust has been formed which will engage in research work and collect rubber-bearing plants for the Russian rubber industry. The program of the trust provides for a crop of at least 27,500 tons of *Chondrilla* bulbs, and in the spring of the current year it is planned to open up extensive *Chondrilla* plantations in the country of its origin. In addition the trust intends to make contracts with the natives to buy up their future crop of *Chondrilla*, the contracts to cover a territory of at least 25,000 hectares. In Turkmenistan and Azerbaijan experimental plantations of guayule have been started and selection stations established, and in the Ukraine systematic cultivation of the rubber-bearing Ukraine "silk plant," has been commenced. It is planned to produce at least 2,000 tons of rubber from *Chondrilla* plants alone during the year 1930-31.

According to available data, Soviet Russia exported 2,767 tons of rubber footwear, value 6,487,000 rubles, during the eleven months from October, 1928, to August 31, 1929, against 1,268 tons, value 4,558,000 rubles, in the corresponding period of the preceding year. At the same time imports of rubber are given as 9,635 tons, value 8,694,000 rubles, against 14,686 tons, value 24,068,000 rubles. For some reason, there has been a heavy drop in the imports of crude rubber in 1928-29 as compared with 1927-28.

France

After pointing out the advantages of concentrated latex for use in manufacturing belting, P. W. Hutchinson in a recent issue of the *Revue Générale du Caoutchouc* gives the following formula for impregnating the fabric and for the adhesive layer between the fabric plies.

Formula For Impregnation		Formula For Adhesive Layer	
Revertex	120	Revertex	130
Litharge	10	Litharge	10
Solution 10 per cent casein	10	Mineral oil	20
Vulcacit P.	0.15	Solution 10 per cent casein	10
Thiurium	0.05	Sulphur	2
Sulphur	2	Water	30
Water	20	Boric acid	1
Boric acid	1		

The Rubber Industry in the Far East

MALAYA

Cessation of May Tapping

The proposal of the Anglo-Dutch Liaison Committee to cease all tapping during May has been received with more enthusiasm than any other proposed measure. It appeals to producers as promising immediate results and more in line with the suggested cooperation between the British and Dutch producers. The leading Asiatic producers are also pleased with the plan, and their support may be counted on. In fact one big producer said that the more important Asiatic estate owners might even support a proposition to stop tapping for one month every six months.

Davis-Seiberling Overtures

While on the subject of rubber salvation, comment by A. W. Still in the *Straits Budget* on the suggestions made by Edgar B. Davis and F. A. Seiberling during their visit to London, is of interest.

"It rather surprises me," says Mr. Still, "that scarcely a word has been heard of the overtures made by Edgar B. Davis and F. A. Seiberling. These American proposals seemed to mean that producers of crude rubber and manufacturers of rubber goods should enter into a kind of partnership.

"Planters are not obtaining remunerative prices; manufacturers realize that under the existing conditions the future of their business is not assured. Scarcity may cripple them a few years hence when demand is urgent. In return for guarantees of future supply, the manufacturers would be prepared to support a higher current price rate. That would be their sacrifice, and the planters would have to give up in return for it the hope of big scarcity prices a year or two hence.

"It seems to me, however, that the real value of the cooperation from a rubber estate point of view is the security it offers against the native rubber menace.

"With 1,500,000 acres of native planted rubber in the Dutch Indies, and almost unlimited scope for new planting of the same kind, the reality of that menace cannot be denied. If the fully constituted estates established a preferential relationship with the great consumers, their future would be sound and secure.

"It is quite possible that agreement along these lines may be unattainable, but why take for granted that it is so and make no real examination of the terms upon which a mutually advantageous compact might be negotiated? Is it because certain vested interests, which are not by any means necessarily identical with the interests of planters and plantation shareholders, stand in the way?"

Company Notes

The Glenealy Plantations, Ltd., had a highly successful year in which the yields were 777 pounds per acre. The all-in cost was 18.61 cents (Straits currency) per pound. The company had made a forward contract for ten tons per month from January to June, 1929, at 30¼ cents per pound and a further contract for 5 tons per month from April to December, 1929, at an average of 42 cents per pound. No forward contracts are at present in operation and the company has no intention of entering any contracts at anywhere near the present price of rubber. The profits for the business year under review came to $110,057 to which has to be added the balance of $48,483 brought forward from the preceding year. An interim dividend of 10 per cent had been paid and a further 12½ per cent was recommended, making 22½ per cent for the year.

The Wilkinson Process Co., Ltd., reports that for the year ended September 30, 1929, a gross profit of $26,179 was earned. However, after allowing for depreciation, general administration, etc., the year's working shows a loss of $129,546. After adding to this the loss of $143,686 brought forward from the previous balance sheet, and deducting the directors' fees, the adverse balance comes to $271,032. This net loss includes $27,848 provided for depreciation and $15,000 written off the value of patent rights and trade marks. The issued capital now stands at $875,604 representing fully paid shares of $1 each.

Latex Patent Litigation

Recently at the Supreme Court of Ipoh a petition was heard for the revocation of a patent granted to S. S. Sturchberry, England, and E. A. Hauser, Germany, for an invention relating to the manufacture of caoutchouc, gutta percha, balata, and analogous vegetable resins, and also Specification No. 52 of 1928 of the K. D. P. Ltd., London.

The petitioner, Veera Kumar Singham, contended that the two methods of producing a reversible paste out of rubber latex claimed as their invention by the respondents: namely, "Protective Colloid," and "Dialysis" or filtration method, had both been anticipated, whereas his own later discovery, alkali process, is the truly scientific and invented process. He further claims to have adapted specifically an original principle of evaporation of viscous fluids and designed an improved tube film evaporator for this purpose.

The court held that the petitioner had not been able to show that he was the actual inventor of the processes in question nor that he had been able to prove fraud, and accordingly dismissed the petition with costs.

NETHERLANDS EAST INDIES

Planting Distances and Rubber Tree Yields

Study of the relation of planting distances to rubber yields, undertaken by Dr. T. A. Tengwall, was recently published in the *Archief voor de Rubbercultuur.* One of the the first planting problems in the early days was number of trees to be planted per unit of area. With no experience behind them, planters naturally differed in their conceptions of the best planting distances, but the average was 300 to 600 trees per hectare. While some plantations of recent date have planted 600 trees per hectare, the majority of estates have 300 to 400 trees per hectare.

For the purpose of discovering the relation between planting distances and outputs, data from 1,173 estates with an area of 58,000 hectares were examined, and for the purpose of comparison the estates were graded as follows: less than 300 trees, 301 to 500 trees, and over 500 trees per hectare. There were 554 estates of the first type with average yield of 387 kilos; 337 estates of the second type with average yield of 407 kilos; and 82 estates of the third type with average yield of 439 kilos per hectare. This strengthens a former conclusion that the optimum planting distance for seedlings cannot be below 500 trees per hectare or about 200 trees per acre. Study of more detailed figures also showed that the more closely planted areas consistently gave higher outputs, the difference in favor of close planting being between 5 and 10 per cent.

There is no reason to assume that the conclusion would be any different where selected seed was used. Most probably the variation in yield is just as great in the case of mother-tree seed, clone seed, etc., as in the case of illegitimate seed, so that narrow planting distances should be adopted even where material of the highest grades is used. On the other hand, it is possible that a wider distance would serve in the case of legitimate seed of a single combination, as here the variation in yield might be smaller than in illegitimate seed. However, for the time being little chance exists that such seed will be used on a large scale, except from natural self-pollinations from isolated seed-gardens.

Thinning Out and Yields

Until Cramer showed that the inherited capacity of a tree was a more important factor in yields than space, it had been reasoned that the more the space, the greater would be the trees' productivity, and accordingly drastic thinning out became the order. On the relation between thinning out and yields, Dr. Tengwall points out that the aim is not to obtain high yields from individual trees but from the entire area, so that the question should be whether the improvement in yields from the remaining trees makes up for that from the trees removed.

For this study, data from 1,400 estates covering an area of 75,000 hectares were used, and the estates divided into four groups: the first ranging from 18 to 28, the second from 15 to 17, the third from 9 to 14, and the fourth from 4 to 8 years. The available figures showed that 66 per cent of the estates had thinned out too drastically, whereas only 13 per cent had not thinned out sufficiently. About 21 per cent of the estates had the optimum number of trees per hectare.

The optima suggested are 265 trees per hectare for 10-year estates and 205 trees per hectare at 16 years.

The investigation further shows that losses due to excessive thinning out frequently come to 50 kilos of rubber per hectare, while losses of 100 kilos per hectare are by no means exceptional. If such losses are to be avoided, care must be taken not to remove too many of the moderate producers in the desire to secure high yielding individuals.

Tapping Age

The effect of altitude, close planting, and interplanting on the girth of trees and, therefore, on the tapping age was investigated by Dr. Tengwall, who examined data from 784 estates and concluded that the higher the altitude, the later the age at which trees can be tapped. The average difference in age per 100 meters is between 0.4 and 0.5 years. With regard to interplanting and close planting, while the former practice handicapped the tree in growth so that Hevea on interplanted areas have to be tapped 6 months later than areas where there is no interplanting, close planting had no such effect. On the contrary, closely planted areas regularly reached the tapping stage before estates with wider distances.

How this is possible is explained as follows: the period when an area is tapped depends upon the number of trees that have reached the tapping stage, that is with a girth or 45 to 50 cm. one meter above ground. In Java a tapping task comprises about 300 trees, and it is naturally important that these are on a relatively small area if tapping is to be economical. Now if there are two gardens, one having 200 trees per hectare and the other 600 per hectare, then at a certain period, when 50 per cent of the trees are tappable, in the one case a tapping task will cover three hectares while in the other only one hectare. In the first instance tapping would be delayed until 300 trees of tapping size were on a smaller area, whereas in the second the trees would be tapped at once.

Although the investigation could not prove that close planting adversely affected the development of the trees before the tapping stage, this does not mean that no question of hampered growth exists, but certainly it seems safe to assume that this is not particularly important.

Rubber from Goldenrod

Edison's efforts to discover a suitable rubber bearing plant are being watched by the press in the East. Lately the *Times of Ceylon*, discussing Edison's experiments with goldenrod, attempted to show how futile such attempts were and cited the case of artichoke rubber in support of its contentions. In 1914 a company was formed to exploit Jerusalem artichoke with the view of obtaining a cheap supply of rubber from this plant which was to be planted in the fens of England and Ireland. A sample of the product, Pavea, was exhibited at the rubber exhibition of 1914, but nothing ever came of this visionary scheme.

Rubber Wrapper

A patent, Netherlands No. 9,528, has been obtained by Simon Rietveld, bookkeeper of the Kali Tello Co., The Hague, for a method of packing rubber. Smoked or unsmoked sheets of rubber are wrapped around the rubber to be shipped, the wrapping being closed by means of a rubber solution. If necessary, the package could be rendered more secure by binding with bands, rope, etc. The advantages claimed for the method is that the high costs of packing cases are avoided, that there is a saving in freight, that the wrapping hermetically closes the rubber package so that the rubber can be shipped over large distances and reach its destination in its original state, that it is not subject to damage from water, that the sheets of rubber used for wrapping have a certain value as they can be used for various articles.

Suggestion of Tapping One Week Out of Four

In the *Algemeen Landbouwweekbladdvoor Ned. Indie* a writer makes the interesting suggestion that it might prove profitable to tap one week out of four, letting the trees rest three weeks for every week they were tapped. He says when trees that are to be removed are subjected to very severe tapping in order to get out of them all the rubber possible, it is found that at first the large deep cuts result in very high yields, which diminish until finally nothing but a watery fluid is obtained.

Of course, these trees are doomed to be cut down anyway, but he asks, has anyone investigated how long it would take those trees to give good yields again if after the excessive tapping, they were rested? He further points out that since many estates have trees that they plan to cut out, the opportunity to test something along the lines he indicates is at hand and might profitably be utilized.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

Number	Commodity	City and Country
*43,952	Footwear	Antwerp, Belgium
*43,972	Rubber goods	Vienna, Austria
†44,006	Druggists' sundries	Berne, Switzerland
*†44,020	Sport goods	Mexico City, Mexico
†44,047	Advertising novelties	Mexico City, Mexico
*44,055	Scrap rubber	Bilbao, Spain
†44,084	Automobile top cloth	Shanghai, China
*44,090	Mechanical goods	Santiago, Chile
†44,108	Shoes	Berlin, Germany
‡44,145	Black tread and retread gum	Hamburg, Germany
‡44,146	Toys	Hamburg, Germany
†44,150	Erasers	Oslo, Norway
‡44,172	Shoes and soles	Harburg, Germany
*44,173	Shoes	Quebec, Canada
†44,229	Tires	Wellington, New Zealand
*†44,233	Tires	Hamburg, Germany
†44,236	Footwear	Istanbul (Constantinople), Turkey
*44,264	Scrap auto tires	Hong Kong, China
*44,266	Raincoats and novelties	Asuncion, Paraguay
*44,269	Balloons	Johannesburg, South Africa
†44,277	Erasers and elastic bands	Madrid, Spain
†44,295	Rubber goods	Cologne, Germany
†44,298	Bathing and sport accessories	Milan, Italy
*44,343	Scrap rubber	St. Brieuc, France
†44,344	Alpargatas soles	Madrid, Spain

* Purchase. † Agency. *†Purchase and agency. ‡ Either.

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Number	Special Circulars
2599	Imports of Belting for Machinery of Cotton or Other Vegetable Fiber and Rubber into the United States, Calendar Year 1929.
2600	Imports of Tires into the United States, Calendar Year 1929.
2601	Imports of Druggists' Sundries into the United States, Calendar Year 1929.
2602	British Exports of Auto Casings, December and Calendar Year 1929.
2603	British Exports of Footwear, December and Calendar Year 1929.
2614	United States Rubber Consumption Survey, 1929.
2617	British Exports of Tires and Tubes, First 11 Months of 1929.
2619	French Tire Exports, December and Calendar Year 1929.
2620	French Footwear Exports, December and Calendar Year 1929.
2622	Comparative Statement of Numbers of Pairs of Canvas Rubber-soled Footwear Shipped from United States to Foreign Countries During 1927, 1928, and 1929.
2623	Comparative Statement of Pounds of Belting Shipped from United States to Foreign Countries During 1927, 1928, and 1929.
2624	Comparative Statement of Pounds of Hose Shipped from United States to Foreign Countries During 1927, 1928, and 1929.
2626	Comparative Statement of Pounds of Packing Shipped from United States to Foreign Countries During 1927, 1928, and 1929.
2629	Comparative Statement of Amount of Tire Repair Materials Shipped from United States to Foreign Countries During 1927, 1928, and 1929.
2630	Comparative Tire Exports from United States, Canada, United Kingdom, and France, Calendar Year 1929.
2631	Belgian Tire Exports, Calendar Year 1929.

A NEW REQUIREMENT FOR LONDON ambulances is smooth-surfaced sponge rubber for pillows, cushions, mattresses, and flooring. It is held that such fittings are not only germ-proof, have no recesses for dirt, but can be easily disinfected, washed, and quickly dried.

Rubber Patents, Trade Marks and Designs

Machinery

United States

1,744,754.* VULCANIZING HEATER. An apparatus for discharging, recharging, and operating vulcanizing equipment for curing articles confined in molds arranged in a pack. H. A. Denmire, Akron, O.

1,744,831.* VULCANIZING PRESS. This is for vulcanizing and molding small rubber articles, and embodies automatic means for controlling the operation. G. R. Canning-Martinsson, Riverside, Ill., assignor to Western Electric Co., Inc., New York, N. Y.

1,745,021.* TIRE DETREADER. Mechanism for rotating a tire for removal of its tread portion by manually controlled power devices or tools. K. W. Liebau, Los Angeles, Calif.

1,745,482.* ROLLER MOLDING PRESS. A press designed for making rubber rollers for clothes wringers. J. O. Goodwin, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,745,827.* BOOT-STRIPPING MACHINE. This is for removing rubber boots from vented boot trees upon which they have been cured with a differential pressure, causing them to adhere strongly to the tree. W. A. Ashton, assignor, by mesne assignments, to Hood Rubber Co., Inc., both of Watertown, Mass.

1,746,267.* MOLD MANIPULATING APPARATUS. This is designed for manipulating the sections of a heel mold, its operation being largely automatic, conveying the mold sections along respective determinate paths for continuous production of goods. B. G. Kuhne and H. Haiss, Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.

* Pictured in group illustration.

1,746,845.* BATHING CAP MACHINE. This is for the production of bathing caps and analogous articles of sheet rubber. The machine forms two or more caps in automatic continuous production from a web of opposed sheets of material. J. Stein and M. Katcher, both of New York, N. Y.; Katcher assignor to Stein.

1,746,998.* REMOVING WIRES FROM BEADS. This machine removes the wire cores from tire beads for reclaiming both wire and rubber. L. B. Gamel, St. Louis, Mo., assignor to Gamel Bead Decoring Co., Peoria, Ill.

1,747,132.* BEAD FORMING MACHINE. Beads are formed upon finger cots in large numbers while they are on the dipping forms. C. A. Pierce, Glen Ridge, assignor to Ewing Rubber Co., Ewing, both in N. J.

1,747,856.* ENDLESS BELT MACHINE. This provides means for building laminated endless belts of trapezoidal cross-section or the so-called V-type belts. C. J. Burkley and E. G. Kimmich, assignors to Goodyear Tire & Rubber Co., all of Akron, O.

1,744,753. MOLDING DEVICE. H. A. Denmire, assignor to General Tire & Rubber Co., both of Akron, O.

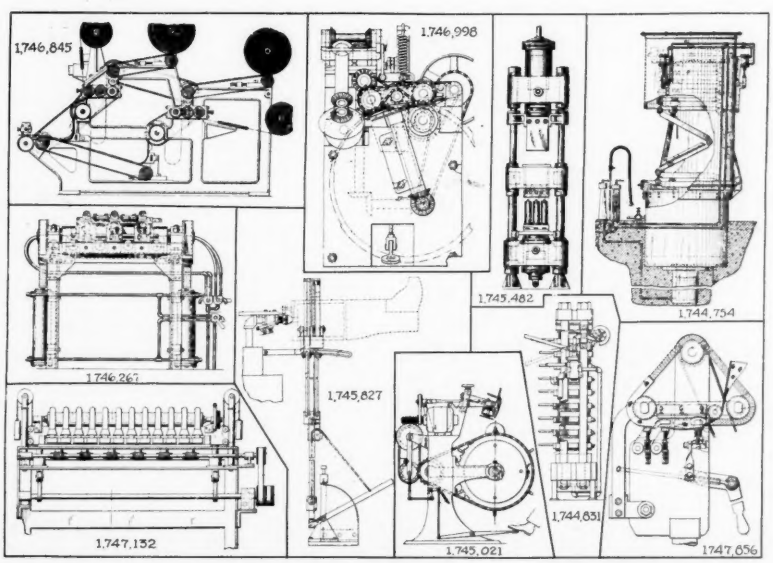
1,744,941. VULCANIZER. W. R. Wood, Globe, Ariz.

1,745,127. BIAS CUTTER TAKE-OFF DEVICE. W. C. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,745,145. ANNULAR RETREAD VULCANIZER. R. W. Brown, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,745,146. JACKETED MOLD. R. W. Brown, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,745,183. TIRE BUILDER. N. H. Myers and F. Goodall, assignors to Firestone Tire & Rubber Co., all of Akron, O.



1,745,408. MOLD. F. J. Creque, Cuyahoga Falls, O.

1,745,500. MOTION INDICATING DEVICE. R. Mayne, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,745,531. MARKER. R. J. Ford, assignor to National India Rubber Co., both of Bristol, R. I.

1,745,642. VULCANIZER. I. J. Remark, assignor to General Tire & Rubber Co., both of Akron, O.

1,745,985. STRIP-CUTTER. H. A. Denmire, assignor to General Tire & Rubber Co., both of Akron, O.

1,746,107. VULCANIZING MOLD. P. De Mattia, Passaic, N. J., assignor, by mesne assignments, to National Rubber Machinery Co., Akron, O.

1,746,119. TIRE-FABRIC CUTTER AND BAND BUILDER. W. F. Koleta, Akron, O.

1,746,200. INNER TUBE VULCANIZER. I. J. Remark, assignor to General Tire & Rubber Co., both of Akron, O.

1,746,357. RUBBER CURING DEVICE. H. R. Minor, Ossining, N. Y., assignor, by mesne assignments, to Industrial Process Corp.

1,746,396. COMPOUND LINER. J. M. Hothersall, Brooklyn, assignor to American Can Co., New York, both in N. Y.

1,746,699. BAND CURING DEVICE. D. S. Harrington, Atlanta, Ga., assignor to Goodyear Tire & Rubber Co., Akron, O.

1,746,763. TIRE RETREADER. R. S. Burdette, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,747,147. TAPE-APPLYING MECHANISM. J. M. Cooke, Revere, Mass., assignor to N. W. Mathey.

1,747,652. BIAS STRIP MACHINE. F. A. Seiberling, Akron, O.

1,747,699. ELECTRIC VULCANIZER. O. C. Dennis, Wilmette, Ill.

1,747,851. COLLAPSIBLE CORE. G. T. Williams, assignor to India Machine & Rubber Mold Co., both of Akron, O.

Dominion of Canada

297,044. WIRE INSULATING DEVICE. Anode Rubber Co., Ltd., St. Peter's Port, Guernsey, assignee of C. L. Darby, Dorchester, Mass., and the Rome Trust Co., executor of the estate of E. H. Darby, deceased, both of Rome, N. Y., all in the U. S. A.

297,137. SHEATHED ARTICLE DEVICE. Western Electric Co., Inc., New York, N. Y., assignee of L. F. Lamplough, Chicago, Ill., both in the U. S. A.

297,248. VULCANIZER. Akron Rubber Mold & Machine Co., assignee of J. W. Brundage, both of Akron, O., U. S. A.

297,282. RUBBER ARTICLE FORM. Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of W. A. Gibbons, Montclair, N. J., U. S. A.

297,283. RUBBER ARTICLE FORM. Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of E. Hazell, New York, N. Y., U. S. A.

297,284. Rubber Article Form. Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of A. W. Keen, Hasbrouck Heights, N. J., U. S. A.

297,294. Tire Casing Builder. Goodyear Tire & Rubber Co., assignee of W. H. Campbell, both of Akron, O., U. S. A.

297,659. Footwear Mold. H. C. L. Dunker, Helsingborg, Sweden, assignee of H. A. Skov, Copenhagen, Denmark.

United Kingdom

321,918. Time-Temperature Controller. Firestone Tire & Rubber Co. (1922), Ltd., London. (Firestone Tire & Rubber Co., Akron, O., U. S. A.)

321,937. Tube Vulcanizer. Firestone Tire & Rubber Co. (1922), Ltd., London. (Firestone Tire & Rubber Co., Akron, O., U. S. A.)

322,066. Tire Making Machine. Dunlop Rubber Co., Ltd., London, and H. Willshaw, Birmingham.

322,176. Article Seaming Device. L. and I. Dorogi, and Dr. Dorogi Es Tarsa Gummigyar, R.-T., all of Budapest, Hungary.

322,455. Hollow Article Mold. C. Macintosh & Co., Ltd., and H. C. Young, both of Manchester, and C. Hemm, Cheshire.

322,664. Airbag Inserter. Firestone Tire & Rubber Co. (1922), Ltd., Middlesex. (Firestone Tire & Rubber Co., Akron, O., U. S. A.)

323,000. Tire Vulcanizing Mold. Firestone Tire & Rubber Co. (1922), Ltd., London. (Firestone Tire & Rubber Co., Akron, O., U. S. A.)

Germany

491,253. Comb Cutter. A. P. Gueutin, Paris, France. Represented by D. Landenberger, Berlin S. W. 61.

491,723. Hollow Rubber Bodies. I. and L. Dorogi and Dr. Dorogi & Co. Gummifabrik A. G., all of Albertfalva-Budapest, Hungary. Represented by W. Fritze and E. Boas, both of Berlin S. W. 61.

491,724. Applying Heel Washers. Goodyear Tire & Rubber Co., Akron, O., U. S. A. Represented by R. H. Horn, Berlin S. W. 11.

491,725. Belting Vulcanizer. Max Muller Maschinen-und-Formenfabrik, Hannover-Hainholz.

492,006. Hollow Hemispheres. K. Kurokawal, Shimonoseki Yamaguchiken, Japan. Represented by F. Haase, Berlin W. 15.

492,007. Mold and Vulcanizer. Dunlop Rubber Co., Ltd., London, England. Represented by R. and M. M. Wirth, C. Weihe, H. Weil, all of Frankfurt a. Main, and T. R. Koehnhorn and E. Noll, both of Berlin S. W. 11.

492,720. Making Beads. S. W. Aldefer, Akron, O., U. S. A. Represented by J. Fritze, Hamburg.

492,721. Tread Making Device. Max Muller Maschinen-und-Formenfabrik, Hannover-Hainholz.

Designs

1,102,543. Tire Vulcanizer. A. Frohlich, Hannover.

1,102,788. Shoe Vulcanizer. J. Wachendorf, Köln-Ehrenfeld.

1,102,817. Adjustable Shoe Mold. K. Henne, Hof, Bavaria.

1,103,135. Shoe Vulcanizer. Schuhmaschinenfabrik Fulda G. m. b. H., Fulda.

1,104,048. Disk Cutter. Continental Gummi-Werke, A. G., Hannover.

1,105,186. Heel Vulcanizing Mold. A. Wagener, Berlin-Charlottenburg.

1,105,187. Sole Vulcanizing Mold. A. Wagener, Berlin-Charlottenburg.

1,105,260. Vulcanizing Mold for Uppers. A. Wagener, Berlin-Charlottenburg.

1,105,467. Dipping Mold. Synthaform Fabrik fur Formtheile aus synthethischen Edelharzen G. m. b. H., Berlin-Lichterfelde-West.

1,107,269. Shoe Repair Vulcanizer. A. Wagener, Berlin-Charlottenburg.

Process

United States

1,745,657. Rubber Substance. H. Beckmann, Berlin-Zehlendorf, Germany.

1,746,249. Shoe Stiffener. J. Fausse, Boston, Mass., assignor to Celastic Corp., Wilmington, Del.

1,747,533. Treating Tire Fabrics. F. L. Sessions, Lakewood, O.

Dominion of Canada

297,229. Rubber-soled Footwear. H. McGhee, Rushcutters Bay, near Sydney, N. S. W., Australia.

297,504. Producing Composite Parts. Western Electric Co., Inc., New York, N. Y., assignee of R. P. Middlekauff, La Grange, Ill., both in the U. S. A.

United Kingdom

322,572. Seaming Rubber. L. and I. Dorogi, and Dr. Dorogi Es Tarsa Gummigyar, R.-T., all of Budapest, Hungary.

322,621. Printing Roller. H. Wade, London. (Oxford Varnish Corp., Detroit, Mich., U. S. A.)

322,834. Attaching Rubber to Metal. C. Macintosh & Co., Ltd., and H. C. Young, both of Manchester.

322,848. Cycle Mudguard End Flaps. Dunlop Rubber Co., Ltd., London, and F. R. Carr, Birmingham.

323,054. Attaching Rubber to Metal. C. Macintosh & Co., Ltd., and H. C. Young, both of Manchester.

Germany

492,386. Coating Paper with Latex. H. Quittner, Vienna, Austria. Represented by F. Quade, Berlin-Zehlendorf.

Chemical

United States

1,744,844. Dispersed Rubber Isomer. H. L. Trumbull, Hudson, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,744,880. Adhesive. W. C. Geer, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,744,881. Paint. W. C. Geer, New Rochelle, assignor to B. F. Goodrich Co., New York, both in N. Y.

1,745,084. Rubber Latex Cement. B. Dewey, Cambridge, and E. C. Crocker, Belmont, both in Mass.; said Crocker assignor to said Dewey.

1,745,533. Hard Rubber Varnish. W. A. Gibbons, Little Neck, and T. V. Binmore, Long Island City, both in N. Y., assignors to Mechanical Rubber Co., Cleveland, O.

1,745,591. Leather Impregnating Material. E. D. Van Tassel, Jr., Swampscott, Mass., assignor to Van Tassel Sole & Leather Corp., Norwich, Conn.

1,745,768. Rapidly Vulcanizing Composition. T. Satow, Tokyo, Japan.

1,745,926. Rubber Composition. H. Gray, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,746,142. Liquefied Rubber Composition. H. P. Butler, New York, N. Y.

1,746,162. Rubber Goods Finish. M. N. Nickowitz, Fairfield, Conn., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

1,746,371. Preserving Rubber. J. Teppema, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,746,875. Tacky Rubber Compound. M. C. Teague, Elmhurst, N. Y., assignor to American Rubber Co., E. Cambridge, Mass.

1,746,888. Latex Coated Paper. G. J. Esselen, Jr., Swampscott, Mass., and R. P. Rose, Jackson Heights, assignors to General Rubber Co., New York, both in N. Y.

1,747,186, 1,747,187, and 1,747,188. Accelerators. W. Scott, assignor to Rubber Service Laboratories Co., both of Akron, O.

1,748,016. Constructional Material. A. C. Fischer, Chicago, Ill., assignor to Philip Carey Mfg. Co., a corporation of O.

Dominion of Canada

297,076. Accelerator. E. I. du Pont de Nemours & Co., Wilmington, Del., assignee of D. H. Powers, Pennsgrove, N. J., both in the U. S. A.

297,208. Rubberlike Substance. E. W. Hultman, Los Angeles, Calif., U. S. A.

297,340. Accelerator. Rubber Service Laboratories Co., assignee of W. A. Moore, both of Akron, O., U. S. A.

United Kingdom

321,882. Plastic Polymerized Product. I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

321,913. Treating Latex. Dunlop Rubber Co., Ltd., London, and G. W. Trobridge, Birmingham.

322,114. Synthetic Rubber. J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.)

322,208. Electric Insulation. W. S. Smith, Devon; H. J. Garnett, Sevenoaks, J. N. Dean, Orpington, both in Kent; H. C. Channon, South Kensington, W. Gardner, Canonbury, and H. F. Wilson, E. Sheen, all in London.

322,449. Abrasive Composition. C. J. Brockbank, London.

322,607. Cosmetics. T. Hashimoto, Tokyo, Japan.

322,752. Cork Composition. J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.)

323,012 and 323,028. BUTADIENE POLYMERIZATION. J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.)

323,038. DIELECTRIC COMPOSITION. Standard Telephones & Cables, Ltd., and M. C. Field, both of London.

323,094. RECOVERING FATS AND OILS. E. B. Warren, London.

General

United States

1,744,769. TABLE COVER. C. A. Hupp, Defiance, O., assignor of one half to W. M. Wilt, Syracuse, Ind.

1,744,904. TOY. D. G. Kelly, Astoria, N. Y.

1,745,202. TIRE-PRESSURE GAGE. E. O. Anderson, San Jose, Calif.

1,745,576. TOY BALLOON. A. J. Kempien, St. Paul, Minn.

1,745,662. SNUBBER. E. I. Dodds, Central Valley, N. Y.

1,745,670. BOXING GLOVE. M. F. Gately, Westpoint, Neb.

1,745,726. HEEL GRIP. C. R. Snow, Portland, Ore.

1,745,790. RUNNING BOARD. H. D. Geyer, assignor to Inland Mfg. Co., both of Dayton, O.

1,745,984. SOLE-LAYING DEVICE. A. Demnitz, Dresden, Germany.

1,746,009. ADAPTER NEEDLE. H. K. Mulford, assignor to National Drug Co., both of Philadelphia, Pa.

1,746,031. TRUCK TIRE COOLER. C. J. Dalton, New York, N. Y.

1,746,169. RESILIENT PAVEMENT. W. E. Swanson, Weehawken, N. J.

1,746,282. HEEL. C. Roberts, Reigate, England, assignor to United Shoe Machinery Corp., Paterson, N. J.

1,746,427 and 1,746,477. BATHING CAP. T. J. Howland, Long Branch, N. J.

1,746,478. BATHING SHOE. T. J. Howland, Long Branch, N. J.

1,746,502. BUMPER. R. Sumi, Osaka, and T. Kishi, Kobe, both in Japan.

1,746,591. TOOTHPICK. G. H. Heymann, Louisville, and E. D. Rose, Bowling Green, both in Ky.

1,746,701. FLEXIBLE CONDUIT. E. G. Kimmich, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,746,709. SURF MATTRESS. H. B. Marshall, Long Beach, Calif.

1,746,821. STEAM HOSE. E. S. Davis, New York, N. Y.

1,746,893. THERAPEUTIC LAMP. J. G. Homan, Steubenville, O.

1,746,902. SHOCK ABSORBER. C. A. Persons, Worcester, Mass.

1,746,953. NURSERY CHAIR PAD. M. L. McCollum, Gloucester, N. J.

1,746,954. DRAFT CONNECTION. F. C. McManus, Brooklyn, assignor to International Motor Co., New York, both in N. Y.

1,746,961. CHECKSTRAP. T. R. Palmer, Erie, Pa.

1,747,051. ELASTIC WEBBING. G. E. Clauss, assignor to Ansonia O & C Co., both of Ansonia, Conn.

1,747,113. MUSICAL INSTRUMENT KEY PAD. E. J. Gulick, assignor to C. G. Conn, Ltd., both of Elkhart, Ind.

1,747,180. CLEANING DEVICE. H. V. Raynor, Denver, Colo.

1,747,313. THERMAL BUILDING. W. C. Miss, St. Paul, Minn.

1,747,331. BOOT COUNTER. F. W. Stuart, Beverly, Mass.

1,747,391. ENEMA. D. Sarason, Munich, Germany.

1,747,584. FIRE HOSE. R. P. Howard, Oakland, Calif.

1,747,603. SHOE PAD. L. Ruth, Lancaster, Pa.

1,747,760. BOTTLE CAP AND CORK. J. U. Duffy, Cleveland, and J. H. Richards, Carrollton, both in O.

1,747,850. HORSESHOE. R. R. Tweed, Audubon, N. J.

1,747,917. BOTTLE CLOSURE. H. B. Wallace, St. Louis, and F. W. Frerichs, Jr., Webster Groves, assignors to Cupples Co., St. Louis, all in Mo.

1,747,965. ARTIFICIAL CALF. J. G. Baldea, Salt Lake City, Utah.

1,748,008. SOAP HOLDER AND MASSAGER. H. Barnowitz, Brooklyn, N. Y.

Dominion of Canada

296,994. PIVOTAL CONNECTION. H. C. Harris, Akron, O., U. S. A.

297,041. SCREEN. G. S. Witham, Jr., Hudson Falls, N. Y., U. S. A.

297,161. RAINCOAT. J. A. Asselin, Baie des Cèdres, P. Q.

297,235. TIRE VALVE. C. S. Preston, San Diego, Calif., U. S. A.

297,293. SOLID TIRE. Goodyear Tire & Rubber Co., assignee of R. S. Burdette, both of Akron, O., U. S. A.

297,661. VEHICLE SHOCK ABSORBER. J. T. Bryan, Garden City, assignee of R. E. Marston, Fairport, both in N. Y., U. S. A.

United Kingdom

321,892. DIAPHRAGM VALVE. P. K. Saunders, Johannesburg, South Africa.

321,897. HEEL. S. E. Andreasson, Gothenburg, Sweden.

321,898. BUOYANT GARMENT. M. L. Kröckel, London.

321,901. BOOT TREE. W. A. Vaughan, London.

321,907. BATHING CAP. R. G. Eagle, Croydon.

321,999. FLEXIBLE COUPLING. C. H. Gray, London.

322,071. MATTRESS SUPPORT. W. H. Southorne, Hertfordshire.

322,205. BUNGHOLE BUSH. F. B. Dehn, London. (American Flange & Mfg. Co., Chicago, Ill., U. S. A.)

322,222. TOY. H. M. Dickins, Brooklyn, N. Y., U. S. A.

322,245. SOLE. J. E. M. Cooke, London.

322,289. ASH EJECTOR. F. Niblock, Singapore, Strait Settlements.

322,299. LIFESAVER. T. Phillips, Victoria, Australia.

322,338. SPRING. S. B. Woolf, London.

322,426. CATHETERS. J. David, Hamburg, Germany.

322,485. MEDICAL APPLIANCE. G. Lakhovsky, Paris, France.

322,512. GOLF CLUB GRIP. A. G. Wilson, Glasgow, Scotland.

322,530. SPHYGMOMETER. W. D. Paterson, Edinburgh, Scotland.

322,630. SHUTTLELESS LOOM. W. Gledhill, Holmfirth, near Huddersfield.

322,709, 322,710, and 322,711. STUFFING-BOX SUBSTITUTE. L., P., and R. Ferguson, all of Renfrewshire.

322,738. BEDPAN. F. G. Rees, Swansea.

322,889. TEAT CUP. G. H. Gascoigne, Wokingham, and J. R. Knox, Reading, both of Berkshire.

323,050. NON-REFILLABLE BOTTLE. J. Klaus-Ott, Bischofszell, Switzerland.

323,088. DOUBLE WINDOW. A. T. Hawkins, London.

323,125. FOOTWEAR. I. and L. Dorogi, and Dr. Dorogi Es Tarsa Gummigyar R.-T., all of Budapest, Hungary.

Germany

491,463. EXCHANGEABLE HEEL. J. Beyer, Wandsbek, near Hamburg.

492,149. SHAVING BRUSH. J. Rohrmann, Bielefeld.

492,380. FRICTION SURFACE. Berlin-Rixdorfer Gummiwaaren-Fabrik Hans Schumann, Berlin N. 65, and Roman von Krencki, Berlin-Halensee.

492,985. RUBBER COUPLING. A. Teufel, Backnang, Wurttbg.

493,086. INFLATABLE FIGURE. G. Gross, Memmingen, Bavaria.

Designs

1,102,652. TIRE. P. Gruttner, Rotenburg i. Hann.

1,102,658. RUBBER PLASTER. Continental Gummi-Werke A. G., Hannover.

1,102,759. BATH CUSHION. E. G. Sage, Berlin-Steglitz.

1,102,837. DOOR FASTENER. P. Schwarze, Quelle, Post Brackwede i. W.

1,103,110. SEAMLESS BOOK COVER. Siemens Elektro-Osmose G. m. b. H., Berlin-Siemensstadt.

1,103,163. BICYCLE SADDLE. M. Holstein, Repelen Kr. Moers.

1,103,464. SUSPENSORY. M. Pech, A. G., für sanitaren Bedraf, Am Karlsbad, 15, Berlin W. 35.

1,103,621. COAT. Meyer & Ries, Hannover.

1,103,691. LEAD CABLE. Allgemeine Elektricitats-Gesellschaft, Berlin N. W. 40.

1,103,718. BLOCK BELT. R. Roderwald, Berlin-Grunewald.

1,103,913. AIRBRAKE AND STEAM HOSE. E. Kubler & Co., G. m. b. H., Berlin-Reinichendorf-West.

1,104,221. ABDOMINAL BELT. J. Rompler, A. G., Zeulenroda.

1,104,288. VESSEL CLOSURE. O. Stade and A. Zahle, both of Hannover.

1,104,493. RUBBER STOCKING. E. Haupt, Berlin-Schoneberg.

1,104,909. FOOTWEAR. Asbest-und Gummiwerke Alfred Calmon A. G., Hamburg 39.

1,104,950. COAT. (According to Design Patent No. 1,103,621.) Meyer & Ries, Hannover.

1,105,023. TRUNK HANDLE. Belinde G. m. b. H., Berlin S. W. 68.

1,105,152. SUCTION CUP. A. Wacker, Bielefeld.

1,106,208. FURNITURE SPRINGS. O. Plattner, Stuttgart.

1,106,518. GAITERS. E. Junger, Breslau.

1,106,593. MILKING TUBES. G. R. Schunemann, Hannover-Linden.

1,106,813. OIL TUBE. Vereinigte Gothania Werke A. G., Gotha.

1,106,917. FISHING BLADDER. Continental Gummiwerke A. G., Hannover.

1,106,973. HOSE. C. Vollrath & Sohn, Kom.-Ges., Bad Blankenburg i. Th.

1,106,988. TIRE WITH WIRES. A. Frohlich, Hannover.

1,107,110. FOOTWEAR TONGUE. Gebr. Seuwen, Rheydt.

Trade Marks

United States

266,515. WASHADE. Waterproofed fabrics. Landers Corp., Toledo, O.

266,518. Representation of three-leaf clover containing photographs of Geo. F. Heerwagen, left, Paul K. Heerwagen, center top, and Louie M. Heerwagen, right, and at the center bottom, a rectangle containing the words: "THREE BROTHERS." Radiator and garden hose, etc. Heerwagen Bros. Co., Inc., Fayetteville, Ark.

266,697. PARISUEDE. Fabrics comprising paper cloth or the like covered with a waterproof material of a suedelike appearance. Marathon Rubber Products, Inc., Wausau, Wis.

266,816. FILENE'S. Sporting goods, toys, and games. Wm. Filene's Sons Co., Boston, Mass.

266,844. SAFE-TEE-TIP. Rubber golf-stick tips. Eno Rubber Corp., Los Angeles, Calif.

266,865. OUR OWN. Cements. Cork Floor Products Co., Portland, Ore.

266,908. AIRWHEEL. Pneumatic and cushion tires, nonskid devices, repair outfits, patches, bandages, etc. Goodyear Tire & Rubber Co., Akron, O.

266,917. Representation of smiling boy in sleeping garments, holding a lighted candle in one hand and a tire with the other, and below, the words: "TIME TO RE-TIRE." Tires and tubes. Fisk Rubber Co., Chicopee Falls, Mass., and Cudahy, Wis.

266,922. Ellipse containing smaller figures and the words: "PENNSYLVANIA GOLD STANDARD QUALITY PRODUCTS." Tires. Pennsylvania Rubber Co., Jeannette, Pa.

266,924. MILES AHEAD. Tires. Sears, Roebuck & Co., Chicago, Ill.

266,926. Circle containing the symbol: "NE." Gears and rubber machinery. National-Erie Co., Erie, Pa.

266,927. Red diagonal line dividing the words: "RED LINE." Tire and tube repair outfits, rubber plugs, cement, nonskid devices, flaps, etc. Goodyear Tire & Rubber Co., Akron, O.

266,932. Blue and gold flag containing representation of a winged foot and the word: "GOODYEAR." Tires, treads, inner tubes, nonskid devices, repair outfits, hose, tubing, belting, machinery packing, etc. Goodyear Tire & Rubber Co., Akron, O.

266,933. Blue and gold flag. Tires, treads, inner tubes, nonskid devices, repair outfits, hose, tubing, belting, machinery packing, etc. Goodyear Tire & Rubber Co., Akron, O.

267,079. Smaller circle partly covering a larger one, the former containing representation of upper rear view of a raincoat, and the larger, a representation of a flying duck and the words: "CUMBERLAND RAINCOAT"; below these appear the words: "SHEDS WATER LIKE A DUCK'S BACK." Raincoats. Cumberland Raincoat Co., Jellico, Tenn.

267,177. SLIK. Raincoats. Straus, Royer & Strass, Inc., Baltimore, Md.

267,179. "LINCOLNSHIRE." Raincoats, capes, footwear, etc. Augustin C. Weaver, New York, N. Y.

267,184. EASY. Rubber sheets, nipples, finger cots, teething rings, syringes, etc. Saks Stamping Co., New York, N. Y.

267,187. SHOWER BOOT. Galoshes. B. F. Goodrich Co., New York, N. Y.

267,239. HICKORY. Bathing caps, bandeaux, and brassieres. A. Stein & Co., Chicago, Ill.

267,241. "RUBBER DOWN." Sponge rubber products. Peerless Rubber Co., Chicago, Ill.

267,242. "PARADOWN." Sponge rubber products. Peerless Rubber Co., Chicago, Ill.

267,246. Representation of a bell containing the letters: "I C." Articles molded from rubber and rubber compound. I. C. Bell, doing business as I. C. Bell Mfg. Co., Dallas, Tex.

267,275. SUPER-CYCLE. Tires. Fisk Rubber Co., Chicopee Falls, Mass., and Cudahy, Wis.

267,403. PARA-KAYTONE. Shower curtains. Para Rubber Co., Newark, N. J.

267,448. NAUTILUS. Leather, cloth, and rubber boots, shoes, and slippers. H. W. Hanan, doing business as Hanan & Son, Brooklyn, N. Y.

267,450. LADY FAIR. Rubber household gloves. United Drug Co., Boston, Mass.

267,455. Black disk having an orange band extending horizontally across the center. Boots and shoes of leather, rubber, canvas, and combinations thereof. Converse Rubber Co., Malden, Mass.

267,460. Blue and gold flag. Soles and heels for boots and shoes composed wholly or partly of rubber. Goodyear Tire & Rubber Co., Akron, O.

267,469. TROPHY TREAD. Rubber and composition soles and heels for boots and shoes. Essex Rubber Co., Inc., Trenton, N. J.

Dominion of Canada

48,407. Word: "JAX" with letter: "J." Cement. Holtite Mfg. Co., Baltimore, Md., U. S. A.

48,408. Word: "COMMANDER" with letter: "C." Cement. Holtite Mfg. Co., Baltimore, Md., U. S. A.

48,419. Words: "DOUBLE EAGLE" and the representation of two eagles disposed within a circular seal. Soles and heels for boots and shoes. Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

48,425. Words: "DOUBLE EAGLE" separated by a circular seal containing a representation of two eagles; the mark is disposed between two small scrolls. Tires and inner tubes therefor, nonskid devices, protectors, repair outfits, patches, bandages, etc. Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

48,426. DOUBLE EAGLE. Tires and inner tubes therefor, nonskid devices, protectors, repair outfits, patches, bandages, etc. Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

48,431. A recurring series of figures formed in three parallel rows and each consisting of rhombs alternating with X-shaped devices, the figures forming the central row being joined together by a strip or rib. Tires. Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont.

48,432. A recurring series of figures formed in four parallel rows, the two outer rows each consisting of rhombs alternating with X-shaped devices; the two inner rows each consisting of incomplete rhombs and X-shaped devices being divided by four parallel strips or ribs, the two central ribs being provided with barbs along their outer edges in staggered relation, and the two outer ribs or strips being integral with the aforesaid inner rows of incomplete rhombs and X-shaped figures and having along their inner edges recesses opposite the barbs. Tires. Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont.

48,435. Words: "RED LINE" in conjunction with a red colored line. Tire and tube repair outfits, rubber plugs, cement, non skid devices, flaps, etc. Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

48,450. EMERALD CORD. Hose. Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

48,479. CLIPPER. Goods made wholly or partly of rubber, rubber compositions, or rubber substitutes. Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont.

48,497. ARISTO. Hard and press rubber goods. Canadian General Rubber Co., Ltd., Galt, Ont.

48,540. Blue and gold flag. Soles and heels for boots and shoes composed wholly or partly of rubber. Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

48,546. BRIDGE. Erasers, pens, pencils, etc. Eagle Pencil Co., New York, N. Y., U. S. A.

United Kingdom

504,546. Representation of two deer facing each another between the words: "DOUBLE DEER BRAND." Puncture closing composition, tire repair outfits, etc. J. Strutt and T. Wood, trading in copartnership, London, E.C.3.

508,689. "MARKSMAN." All goods in Class 40. Dunlop Rubber Co., Ltd., London, N.W.1.

508,780. AERUB. Goods of india rubber and gutta percha not included in other classes than Class 40. St. Albans Rubber Co., Ltd., London, E.C.2.

509,409. NUVEL. Goods of india rubber and gutta percha not included in other classes than Class 40. I. B. Kleinert Rubber Co., New York, N. Y., U. S. A.

Labels

United States

37,038. GAYTEES. Overshoes and galoshes. United States Rubber Co., New York, N. Y.

37,105. GOODYEAR OHIO COMPANY. Raincoats. S. H. Sanger and H. B. Reichek, doing business as Goodyear Ohio Co., Cleveland, O.

Designs

United States

80,500. WEBBING FOR GARTERS, SUSPENDERS, ETC. Term 3½ years. Russell Mfg. Co., Middletown, Conn.

80,540. SOLE. Term 7 years. M. L. Paterson, Boston, assignor to Converse Rubber Co., Malden, both in Mass.

MARKET REVIEWS

Crude Rubber

New York Exchange

THE topic of greatest interest to the rubber trade, at this time, is the success or the failure of the attempts to curtail production in the Far East.

The Henderson *Market Review* for March 1 reads, "On Wednesday, London cables reported that the Rubber Growers Association had sent circulars to rubber producers recommending that they agree to the Anglo-Dutch Liaison Committee's proposal to stop tapping during May. It was provided that producers would be released from assent, if by April 8, 1930, the adherence to the proposal represented less than 70 per cent of the production of 1929."

Symington & Sinclair, London, wrote on February 26, "With the most immediate effect of the agreement, in terms of tonnage we attempt to deal below. Actually we think the move is even more important judged from another standpoint, namely, that for the first time in rubber history Dutch and English producers are working in agreement. It must be borne in mind that the meeting in Amsterdam represented not only Dutch producing interests, but French, Belgian, and other producers, so that all European interests may be said to be in the scheme. There is also ground to believe that through the local associations in Malaya, the larger Asiatic estate owners will cooperate."

As to the effect of the proposed tapping restriction agreement, if adopted in terms of tonnage, we believe this factor to be of such interest that we quote further:

RUBBER EXCHANGE ACTIVITIES

Transactions

Week Ended	Contracts Sold: Number	Contracts Sold: Tons	Transferable Notices	Week-End Tone
Mar. 1....	2,884	7,210.0	462	Barely steady
Mar. 8....	2,412	6,030.0	84	Steady
Mar. 15....	750	1,875.0	246	Quiet and steady
Mar. 22....	1,015	2,537.5	349	Quiet
Totals....	7,061	17,652.5	1,141	

On the basis of last May's production with an added 10 per cent for new areas and consequent increase in yield, the total far eastern May production should be 41,600 tons.

"There are about 300,000 acres in Asiatic ownership of estates over 100 acres, and about 120,000 acres owned by American manufacturers, and the Dunlop company. The manufacturers' area is not likely to cooperate, but a considerable portion of the Asiatic owned estates will probably come in."

Assuming that 300,000 acres remain out of the scheme, this area will produce about 4,500 tons. Taking this from the total production for May, we arrive at about 36,000 tons, as the quantity of rubber likely to be affected. Assuming that but 85 per cent of this area will come into the scheme, the decrease in the world's output, if the plan be adopted, would be 30,000 tons for 1930.

The Rubber Manufacturers Association estimates for the end of February, domestic stocks of crude rubber, on hand or in transit overland, at 131,748 long tons compared with 120,649 on January 31, and 90,058 tons on February 28, 1929. Crude rubber afloat to United States ports on February 28 are 63,404 tons as against 61,863 tons on January 31. February consumption is estimated at 32,726 tons compared with 41,137 consumed in February, 1929.

The last week of February opened with rubber at the highest price reached within the month, but by the first of March a recession of some 90 points carried the more advanced positions below the 16-cent level.

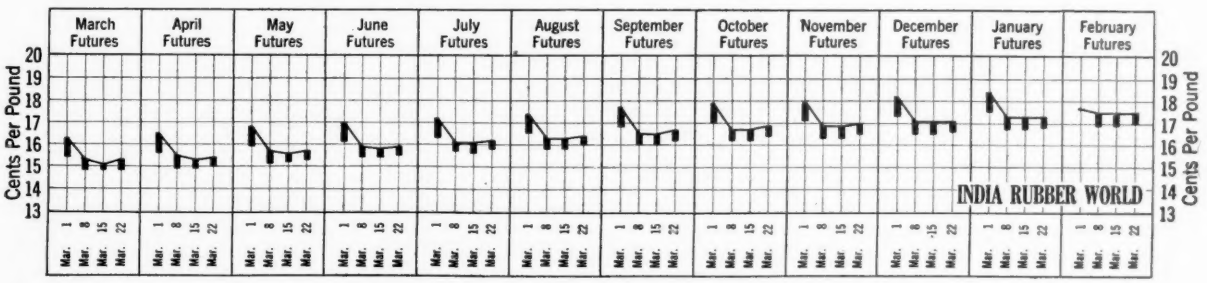
PRICES FOR THE WEEK ENDED MARCH 1:

Position	High	Low	Close	Previous Week's Close
Mar.	16.30	15.40	15.40	16.40
Apr.	16.50	15.60	15.60	16.60
May	16.80	15.90	15.90	16.90
July	17.20	16.40	16.40	17.40
Sept.	17.70	16.80	16.80	17.70
Nov.	18.00	17.10	17.10	18.00
Jan.	18.40	17.50	17.50	18.40

Week ended March 8: The Rubber Exchange announced that operations at the large tire factories in the Akron district were being maintained at an unchanged rate, at the start of the present month. Some of the smaller tire companies have curtailed production recently, two or three members of the group having reduced their operating schedule to a three-day-week basis.

Official figures give motor vehicles produced for January at 273,089 compared to 119,250 for December and 402,154 made

New York Rubber Exchange Clearing House Prices—High and Low Weekly Changes on "A" Contracts for Monthly Futures



The Rubber Exchange of New York, Inc.

DAILY MARKET FUTURES—RIBBED SMOKED SHEETS—CLEARING HOUSE PRICES—CENTS PER POUND—"A" CONTRACTS

Positions 1930	February, 1930: 24	25	26	27	28	March, 1930: 1	3	4	5	6	7	8	10	11	12	13	14	15	17	18	19	20	21	22
February ...	15.9	15.4	15.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
March	16.3	15.8	15.8	15.5	15.7	15.4	15.0	15.1	14.8	14.9	15.1	15.3	15.1	14.8	14.8	14.8	14.8	14.8	15.1	15.1	14.8	15.1	15.3	15.2
April	16.5	16.1	16.0	15.7	15.9	15.6	15.2	15.3	14.9	15.1	15.3	15.5	15.3	15.0	15.0	15.0	14.9	14.9	15.3	15.2	15.0	15.2	15.4	15.3
May	16.8	16.4	16.3	16.0	16.1	15.9	15.5	15.5	15.1	15.3	15.6	15.7	15.6	15.2	15.2	15.2	15.2	15.2	15.5	15.5	15.3	15.5	15.7	15.6
June	17.0	16.5	16.5	16.2	16.2	16.1	15.7	15.7	15.4	15.5	15.8	15.9	15.8	15.4	15.4	15.4	15.4	15.4	15.7	15.8	15.5	15.7	15.9	15.8
July	17.2	16.7	16.8	16.4	16.5	16.3	16.0	16.0	15.7	15.8	16.1	16.1	16.1	15.6	15.7	15.6	15.6	15.7	16.0	16.1	15.8	16.0	16.2	16.1
August	17.4	16.9	17.0	16.6	16.7	16.5	16.2	16.2	15.8	16.0	16.3	16.3	16.3	15.8	15.9	15.8	15.8	15.9	16.2	16.3	16.0	16.2	16.4	16.3
September ..	17.7	17.2	17.2	16.9	17.0	16.8	16.4	16.4	16.0	16.2	16.5	16.5	16.5	16.1	16.2	16.1	16.0	16.1	16.4	16.5	16.2	16.4	16.7	16.6
October	17.9	17.4	17.4	17.1	17.1	17.0	16.5	16.6	16.2	16.4	16.7	16.7	16.7	16.3	16.4	16.3	16.2	16.3	16.6	16.7	16.4	16.6	16.9	16.8
November ..	18.0	17.5	17.6	17.2	17.2	17.1	16.8	16.7	16.3	16.5	16.8	16.9	16.9	16.4	16.5	16.4	16.3	16.4	16.7	16.8	16.5	16.7	17.0	16.9
December ..	18.2	17.7	17.8	17.4	17.4	17.3	17.0	16.9	16.5	16.7	17.0	17.1	17.1	16.6	16.6	16.6	16.5	16.6	16.8	16.9	16.6	16.9	17.1	17.0
1931																								
January	18.4	17.9	18.0	17.6	17.6	17.5	17.2	17.1	16.7	16.9	17.2	17.3	17.3	16.8	16.8	16.8	16.7	16.8	17.0	17.1	16.8	17.1	17.3	17.2
February ...	...	...	...	...	...	17.7	17.4	17.3	16.9	17.1	17.4	17.5	17.5	17.0	17.0	17.0	16.9	17.0	17.2	17.3	17.0	17.3	17.5	17.4

during January, 1929. The year 1929 produced 73,417,181 tires and 73,853,355 tubes compared to 78,621,448 tires and 80,179,840 tubes in 1928. The report states, "For the first time, we believe, in the history of the industry the total production of tires in 1929 exceeded the production of inner tubes."

Symington & Sinclair said on March 5, "While there seems to be no doubt that the Anglo-Dutch proposals will in due course go through, the market generally declines to be impressed by them in view of the fact that for the moment, the statistical position remains unfavorable for any rise. Stocks in London and Liverpool this week have reached 85,076 tons, which constitutes a high record."

PRICES FOR THE WEEK ENDED MARCH 8:

Position	High	Low	Close	Previous Week's Close
Mar.	15.30	14.80	15.30	15.40
Apr.	15.50	15.00	15.50	15.60
May	15.70	15.20	15.70	15.90
July	16.20	15.70	16.20	16.40
Sept.	16.60	16.10	16.60	16.80
Nov.	16.90	16.40	16.90	17.10
Jan.	17.30	16.70	17.30	17.50

The week ended March 15: The Exchange announced that trading in the new rubber contract known as the No. 1 Standard would begin on April 1, deliveries on the new basis to be made on and after May 1. Prices will be reckoned in multiples of one one-hundredth of a cent per pound, and the unit of delivery 10 tons. Commissions on the No. 1 Standard Contract are one-way commissions for buying and selling and computed on a sliding scale based on the varying prices of rubber.

Stocks of crude rubber in London and Liverpool continued to increase during the week, and the report from the Rubber Manufacturers Association shows that American supplies of the commodity also were at a new record high figure of 195,152 long tons, including rubber afloat. The Rubber Exchange estimates that by the end of next week the combined American and United Kingdom stocks will amount to 282,500 tons, or roughly one-third of the world's annual production.

H. Hentz & Co. stated, "Quieter conditions have ruled in the crude rubber markets and prices have sagged to somewhat under the 15-cent level for the current position. The absence of any further developments in connection with the proposed Anglo-Dutch restrictive cooperation, the continued additions to stocks of the commodity and the failure of any increased consumptive demand to materialize, have combined to effect the reaction, on comparatively light trading."

PRICES FOR THE WEEK ENDED MARCH 15:

Position	High	Low	Close	Previous Week's Close
Mar.	15.20	14.80	14.90	15.30
Apr.	15.30	15.00	15.00	15.50
May	15.70	15.20	15.30	15.70
July	16.10	15.70	15.80	16.20
Sept.	16.50	16.10	16.10	16.60
Nov.	16.90	16.30	16.40	16.90
Jan.	17.30	16.70	16.90	17.30

During the week ended March 22, the Rubber Exchange reported that over 70 per cent of the British Rubber Growers Association and Dutch planting interests together with a substantial native following had agreed to the cessation of tapping during May.

PRICES FOR THE WEEK ENDED MARCH 22:

Position	High	Low	Close	Previous Week's Close
Mar.	15.40	14.90	15.20	14.90
Apr.	15.40	15.00	15.30	15.00
May	15.80	15.40	15.70	15.30
July	16.30	15.90	16.20	15.80
Sept.	16.70	16.30	16.70	16.10
Nov.	17.00	16.50	16.90	16.40
Jan.	17.30	16.80	17.20	16.90

On March 24, trading on the Rubber Exchange was quiet with prices firm and very steady, closing 20 to 30 points advance from Saturday's closing prices. Sales totaled 241 lots or 602½ tons. Spot ribs closed at 15.6 cents, nominal.

March 25 prices eased off slightly for March, September, and December positions. For all other positions the prices were nominal and unchanged from Monday. Trading was less active and sales totaled 118 contracts or 295 long tons. Spot ribs closed at 15.5 cents nominal.

New York Outside Market

The conditions in the market for actuals during March closely resembled those prevailing in February both as to general tone and price range. In other words, the consuming demand was moderate and steady to meet current manufacturing needs.

World stocks of rubber have accumulated to an unprecedented amount because of the recession of consuming demand incident to the slackening of industry in the United States. Prices are adjusted to these conditions and have held approximately at the 16-cent level since last fall. The firmness of the price is derived from that of rubber in the far eastern primary markets where, it is believed, active buying has been in progress by large American manufacturing interests.

Rubber manufacturers in general are waiting for the expected spring revival of the automobile and other industries requiring rubber goods, before making heavy commitments for future requirements. The trade is also looking with interest for the expected announcement on April 8 making effective a scheme of cessation from tapping during May, planned jointly by the organized Dutch and English rubber growers with whom the native rubber producers are pledged to join.

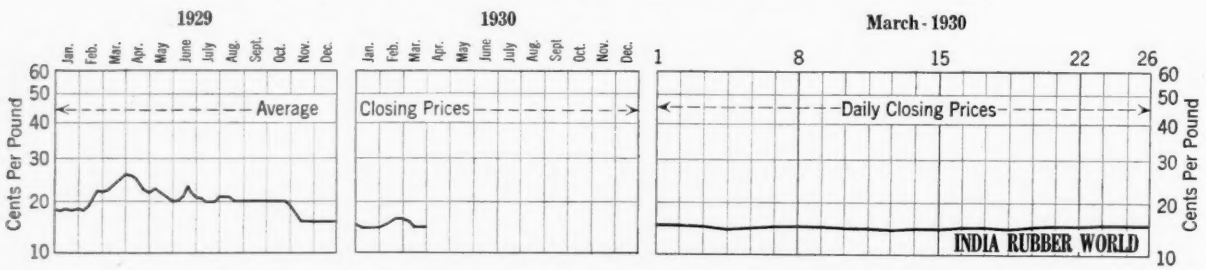
Reviewed by weekly periods, the outside market presented the following features:

The week ended on March 1 began with spot ribs at 16⅜ cents and registered a total decline for the week of 5/8-cent. The last three days of the week the closing price was steady at 15¾ cents, the average closing for the entire week being 15.9 cents. The market firmness noted during the week reflected the tone that prevailed in the Rubber Exchange market. Factory interest was practically dormant although some factories bid 15 cents for ribs at the end of the week, when the closing prices were:

Spot	Mar. 1	Month Ago	Year Ago
Crepe	16¼	15⅝	26½
Ribs	15¾	15⅛	26⅛
Upriver fine....	16¾	15⅜	27

The week terminated on March 8 was

New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets



New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

	February, 1930					March, 1930															
	24	25	26	27	28	1	3	4	5	6	7	8	10	11	12	13	14	15	17	18	19	20	21	22
Ribbed smoked sheet....	16⅜	15⅞	15⅞	15¾	15¾	15¾	15⅜	15¼	14⅞	15	15¼	15⅜	15¼	15	15	14⅞	15	15	15¼	15¼	15	15¼	15½	15½
No. 1 thin latex crepe....	16⅞	16⅜	16⅜	16⅛	16¼	16¼	15⅞	15¾	15⅜	15½	15⅝	15⅞	15⅝	15⅜	15½	15⅜	15½	15½	15⅝	15⅝	15⅜	15⅝	15⅞	15⅞
No. 1 thick latex crepe..	16⅜	16	16	15¾	15⅞	15¾	15½	15⅜	15	15⅛	15¼	15⅜	15⅜	15	15	15	15⅛	15⅛	15⅜	15¼	15⅛	15¼	15⅜	15⅜
No. 1 brown crepe.....	15⅛	14⅞	14¾	14⅜	14⅝	14⅜	14⅛	14	13¾	13⅞	14	14⅛	14	13⅞	13⅞	13⅞	13⅞	13⅞	14	14	13⅞	14⅛	14⅛	14¼
No. 2 brown crepe.....	14⅞	14⅝	14⅝	14¼	14⅜	14⅛	13¾	13¾	13½	13⅝	13¾	13⅞	13¾	13⅝	13⅝	13⅝	13½	13½	13⅝	13⅝	13⅝	13¾	13⅞	14
No. 2 amber.....	15¼	14⅞	14⅞	14½	14¾	14½	14	13¾	13⅞	14	14⅛	14	13⅞	13⅞	13⅞	13⅞	13⅞	13⅞	14	14	13⅞	14⅛	14¼	14⅜
No. 3 amber.....	15	14⅝	14⅝	14¼	14½	14¼	13⅞	13¾	13½	13⅝	13¾	13⅞	13¾	13⅝	13⅝	13⅝	13⅝	13⅝	13¾	13¾	13⅝	13⅞	14	14⅛
No. 4 amber.....	14½	14	14	13¾	13⅞	13⅝	13⅜	13¼	12⅞	13	13⅛	13¼	13⅛	13	13	13	12⅞	12⅞	13⅛	13⅛	13	13¼	13⅜	13⅜
Rolled brown.....	10½	10¼	10⅛	10⅛	10⅛	10	9⅞	9¾	9½	9⅝	9½	9¾	9½	9½	9½	9⅝	9½	9½	9¾	9⅝	9⅝	9¼	9¾	9⅞

characterized by a rapid drop in the closing price of ribs from 15⅜ cents on Monday to 14⅞ cents on Wednesday. The remainder of the week witnessed a reversal of prices, which returned by Saturday to Monday's level of 15¾ cents. Early in the week little factory interest was evident, but by Wednesday nearby rubber was in fairly good demand. The week closed with standard qualities firm as follows:

Spot	Mar. 8	Month Ago	Year Ago
Crepe	15⅞	16⅛	25¾
Ribs	15⅜	15¾	25¾
Upriver fine....	16½	17	26½

For the week ending on March 15, prices of ribs on Monday closed fairly firm at 15¼ cents but sank by easy stages to 14⅞ cents on Thursday in a quiet market that lacked factory interest. As in the previous week, the price became firm the last two days, closing on both Friday and Saturday at 15 cents for ribs. Following is the record of the week's closing prices:

Spot	Mar. 15	Month Ago	Year Ago
Crepe	15½	16½	25
Ribs	15	15⅜	24¾
Upriver fine....	16½	17	25¾

The week that closed on March 22 showed an improvement of factory interest to fair proportions. On Monday and Tuesday ribs closed firm at 15¾ cents, but declined ¼-cent to 15 on Wednesday. While inquiries were limited, the price gained firmness and advanced on Thursday to 15¼ cents closing. It was on the up grade on Friday, rising to 15½ cents and maintaining this level at the close on Saturday. This steadiness reflected conditions on the New York Rubber Exchange and also the firmness of the far eastern markets. The week's closing record follows:

Spot	Mar. 22	Month Ago	Year Ago
Crepe	15⅞	16⅞	23½
Ribs	15½	16⅜	23
Upriver fine....	16½	17	24

On March 24, actuals continued their price recovery from the close of the previous week. A good inquiry on the part of manufacturing interests appeared. Spot ribs closed at 15⅝ cents.

On Tuesday, March 25, rubber was very steady and virtually unchanged in price. Some inquiry appeared from factories for nearby standard ribs but the bids were too low to interest dealers. Spot ribs closed at 15½ cents bid, 15¾ cents asked.

Importations of all grades in February, 1930, were 43,728 tons compared with 64,538 tons one year ago. Plantation arrivals for February were 42,785 tons, compared with 63,851 tons one year ago. Total importations of plantation grades for two months ended February 28 were 89,189 tons, compared with 115,053 tons for the corresponding period of 1929. Total importations of all grades of rubber for the two months ended February 28 were 91,090 tons compared with 116,843 tons for the corresponding period of 1929.

No. 1 Standard Contract

Trading in the new rubber contract known as the No. 1 Standard will begin on April 1, it was made known to the trade by the Rubber Exchange of New York. Deliveries on the new basis are to be made on and after May 1, 1930.

Prices on the new No. 1 Standard contract will be in multiples of one one-hundredth of a cent per pound, and the unit of delivery 10 tons.

Commission on the No. 1 Standard contract are one-way commissions for buying and selling, and on a sliding scale based on varying prices for rubber. There is also a provision for commissions on complete straddle transactions under the No. 1 Standard.

Trading in the present "A" contract of 2½ tons will continue in multiples of ten one-hundredths of a cent, with the round turn commissions as heretofore.

April Price Differentials

The adjustment committee of the Rubber Exchange of New York has fixed price differentials between the various grades of Hevea plantation rubber deliverable against exchange contracts during April as follows:

"A" Contracts. Off quality first latex crepe, 0.3 cents per pound; good f.a.q. ribbed smoked sheets, 0.6 cents; ordinary f.a.q. ribbed smoked sheets, 1.3 cents.

"BB" Contracts. "C" blanket crepe, 0.25 cents; "D" blanket crepe, 0.75 cents; No. 1 brown crepe at contract price; No. 2 brown crepe, 0.25 cents.

Limits of allowance on "D" blanket crepe are fixed at 0.5 cents per pound, and No. 2 brown crepe at 0.25 cents.

New York Quotations

Following are the New York outside market rubber quotations for one year ago, one month ago, and March 25, the current date

Plantation Hevea	March 25, 1929	February 24, 1930	March 25, 1930
Rubber latex (Hevea)..gal..	$1.40 @	$1.25 @	$1.25 @
CREPE			
No. 1 Thin latex (first latex) spot	.23½@	.16¾@.17	.15¾@.16
April-June	.23¾@	.17 @.17½	.16⅜@.16½
July-September	.24 @	.17½@.18	.17 @
October-December	.24½@	@	.17½@.17¾
No. 2 Amber, spot ("B" blanket)	.19¼@	.15¼@	.14½@
April-June	.19½@	.15½@	.15 @
July-September	.19¾@	.16 @	.15½@
October-December	.20 @	@	.16 @
No. 3 Amber, spot ("C" blanket)	.19 @	.15 @	.14¼@
No. 1 Brown, clean, light thin	.19¼@.19½	.15¼@	.14½@
No. 2 Brown, clean, thin..	.19 @.19¼	.14⅞@.15	.14¼@
Brown, roll	.14¾@.15	.10½@.10¾	.10¼@
Sheet			
Ribbed, smoked, spot	.15½@	.16½@	.15½@.15⅝
April-June	.22¾@	.16¾@.17	.16 @
July-September	.23 @	.17¼@.17½	.16½@.16⅝
October-December	.23½@	@	.17 @.17¼
East Indian			
PONTIANAK			
Banjermasin	.09 @.09½	.09 @	.08 @
Pressed block	.15½@	.15 @	.14 @
Sarawak	.10½@	.09 @	.08 @
South American			
PARAS			
Upriver, fine	.23 @.23½	.17⅜@	.16½@
Upriver, fine	@	*.22½@	*.22 @
Upriver, coarse	.13½@.14	.08½@	.08 @
Upriver, coarse	@	*.14½@	*.14½@
Islands, fine	.18 @.18½	.16¼@	.15¾@
Islands, fine	@	*.22¾@	*.21½@
Acre, Bolivian, fine	.23½@.24	.17¾@	.17 @
Acre, Bolivian, fine	@	*.23 @	*.22½@
Beni, Bolivian	.24 @.24½	.18 @	.17¼@
Madeira, fine	.23 @	.17⅜@	.16½@

South American	March 25, 1929	February 24, 1930	March 25, 1930
PARAS—*Continued*			
Peruvian, fine	$0.22 @	$0.16½@	$0.16 @
Tapajos, fine	.22 @	.16⅞@	.16 @
CAUCHO			
Upper caucho ball	.13½@.14	.08 @	.08 @
Upper caucho ball	@	*.14¼@	*.14½@
Lower caucho ball	.14 @	.07½@	.07½@
Maniçobas			
Ceará negro heads	†.19 @	†.19 @	†.19 @
Ceará scrap	†.11 @	†.11 @	†.11 @
Manicoba, 30% guaranteed	†.21 @	†.21 @	†.21 @
Mangabiera, thin sheet	†.21 @	†.21 @	†.21 @
Centrals			
Central scrap	.12 @.13	.08 @.09	.07¾@
Corinto scrap	.12 @.13	.08 @.09	.07¾@
Esmeralda sausage	.12 @.13	.08 @.09	.07¾@
Guayule			
Duro, washed and dried	.20 @	.17 @	.17 @
Ampar	.21½@	.18 @	.18 @
Gutta Percha			
Gutta Siak	.19½@.20	.16½@.17	.16 @
Gutta Soh	.31 @.32	.27 @	@
Red Macassar	2.25 @	2.50 @	2.50 @
Balata			
Block, Ciudad Bolivar	†.49 @	.40 @.41	.43 @
Colombia	†.47½@	.34 @	.39 @
Manaos block	.57 @	.39 @	.41 @
Surinam sheet	.52 @	.51 @.52	.54 @
Amber	.54 @	.53½@	.56 @
Chicle			
Honduras	‡.68 @	‡.65 @	‡.65 @
Yucatan, fine	‡.68 @	‡.65 @	‡.65 @

*Washed and dried crepe. Shipment from Brazil.
†Nominal. ‡Duty paid.

RUBBER AFLOAT TO THE UNITED STATES

All figures in long tons.

Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	Total
Mar. 1..	8,146	2,315	2,898	57	13,416
Mar. 8..	6,637	925	1,990	45	9,597
Mar. 15..	6,256	658	1,786	10	8,710
Mar. 22..	7,075	753	1,997	19	9,844

RUBBER SCRAP

IN the rubber scrap market most grades were in only moderate demand owing to the ample stocks in the hands of reclaimers and the absence of the usual activity in the reclaiming industry during the past winter.

In consequence of the slow movement of stocks scrap dealers have not accumulated material very heavily. Export demand for tubes and solids is active.

BOOTS AND SHOES. The demand for this grade of scrap continues fair with prices unchanged from one month ago.

INNER TUBES. Movement is seasonably active, No. 1 floating is unchanged. All other grades have declined in price.

TIRES. Prices have declined, and demand is gradually improving. White grades have been removed from the list below because there are not sufficient white tires made to warrant classification. To the list, however, have been added Special Auto Tire Stock, commonly known as S.A.G., and Auto Tire Carcass.

SOLID TIRES. The demand is well sustained, but the grade is becoming reduced in supply because of the steady elimination of solid tires by heavy pneumatics.

MECHANICALS. All grades are quoted unchanged from the levels of last month. In the list are included for the first time two grades formerly listed as Regular Soft Hose but now subdivided into Rubber Covered Garden Hose and Soft Steam and Water Hose.

CONSUMERS' BUYING PRICES

Carload Lots

Delivered Eastern Mills
March 25, 1930

	Prices
Boots and Shoes	
Boots and shoes, black 100 lb.	$1.20 @$1.35
Untrimmed arctics...100 lb.	.75 @ .85
Tennis shoes and soles 100 lb.	.75 @ 1.00
Inner Tubes	
No. 1, floating...lb.	.07 @ .07¼
No. 2, compound...lb.	.03½ @ .03⅝
Red ...lb.	.03⅝ @ .03¾
Mixed tubes ...lb.	.03⅜ @ .03½
Tires	
Pneumatic Standard	
Mixed auto tires with beads ...ton	17.00 @18.00
Beadless ...ton	24.50 @26.00
Special auto tire stock (S.A.G.) ...ton	26.00 @27.50
Auto tire carcass...ton	32.50 @34.00
Black auto peelings...ton	28.00 @32.50
Solid	
Clean mixed truck...ton	24.50 @26.00
Light gravity...ton	28.50 @30.00
Mechanicals	
Mixed black scrap...lb.	.00¾ @ .01
Hose, air brake...ton	18.00 @18.50
Garden, rubber covered.lb.	.00⅝ @ .00¾
Steam and water, soft.lb.	.00½ @ .00⅝
No. 1 red...lb.	.02 @ .02¼
No. 2 red...lb.	.01 @ .01½
White druggists' sundries..lb.	.02 @ .02½
Mechanical ...lb.	.01½ @ .01⅝
Hard Rubber	
No. 1 hard rubber...lb.	.08½ @ .09

RECLAIMED RUBBER

THE demand for reclaimed rubber during the past month showed an increase over that in February; thus consumption figures, when reported for March, will probably show an advance.

Reclaimers basing their view on current outlook are anticipating at least 10 per cent increase in consuming demand for April. The largest factor in such an increase will be the expansion of tire output stimulated by the approach of mild spring weather. At the present time the current production of reclaim does not exceed 50 per cent of capacity.

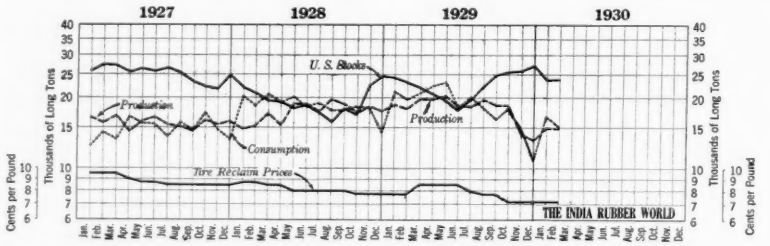
The prices of black and selected grades of auto tire reclaims are quoted unchanged from four months ago. Other standard grades of auto tire reclaim, including high tensile, are quoted fractionally lower. The same is true of washed shoe, No. 2 tubes, red miscellaneous, and mechanical blends.

New York Quotations

March 25, 1930

High Tensile	Spec. Grav.	Price Per Pound
Super-reclaim, black...	1.20	$0.11¾ @$0.12
red ...	1.20	.10¾ @ .11
Auto Tire		
Black ...	1.21	.07 @ .07¼
Black selected tires....	1.18	.07¼ @ .07½
Dark gray ...	1.35	.08½ @ .08¾
Light gray ...	1.38	.09½ @ .10
White ...	1.40	.11 @ .11½
Shoe		
Unwashed ...	1.60	.07 @ .07¼
Washed ...	1.50	.09 @ .09½

Tube	Spec. Grav.	Price Per Pound
No. 1...	1.00	$0.12 @$0.12½
No. 2...	1.10	.09 @ .09½
Truck Tire		
Truck tire, heavy gravity ...	1.55	.07 @ .07¼
Truck tire, light gravity	1.40	.07¼ @ .07½
Miscellaneous		
Red ...	1.35	.10½ @ .11
Mechanical blends.....	1.60	.06 @ .06½



Production, Consumption, Stocks, and Prices of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1925 ...	132,930	137,105	35.6	13,203	4,571
1926 ...	180,582	164,500	45.9	23,218	5,391
1927 ...	189,144	178,471	47.6	24,980	8,540
1928 ...	208,516	223,000	50.4	24,785	9,577
1929 ...	219,057	224,253	47.9	27,464	12,721
1928					
January ...	14,862	20,140	58.5	21,941	887
February ...	15,291	18,670	55.4	20,848	813
March ...	17,069	20,680	57.9	19,558	879
April ...	15,393	19,280	58.8	19,283	810
May ...	18,945	20,215	54.1	18,137	889
June ...	18,781	18,140	48.2	18,709	358
July ...	17,278	19,070	51.0	17,305	986
August ...	19,049	17,890	41.7	15,881	909
September ...	18,693	17,795	44.6	17,991	809
October ...	17,182	18,420	45.1	17,026	842
November ...	18,245	18,380	49.1	22,399	730
December ...	17,728	14,320	45.9	24,785	673
1929					
January ...	18,685	21,068	49.1	24,394	941
February ...	18,094	19,829	47.7	23,305	1,028
March ...	19,984	20,867	46.7	22,076	1,344
April ...	19,899	22,435	47.3	20,680	1,498
May ...	20,385	23,176	47.1	19,479	1,299
June ...	18,416	18,141	42.0	17,980	961
July ...	18,387	20,236	48.7	19,679	1,202
August ...	19,787	18,230	47.6	22,309	860
September ...	18,660	16,416	47.2	24,984	657
October ...	18,968	18,024	51.8	25,474	830
November ...	14,363	14,742	53.4	26,080	1,232
December ...	13,429	11,089	47.1	27,464	869
1930					
January ...	15,010	16,785	45.8	24,241	954
February ...	15,847	14,918	45.5	24,241	1,203

*Stocks on hand the last of the month or year.
Compiled by Rubber Manufacturers Association.

ADVERTISING PAGES REMOVED

Compounding Ingredients

THE demand for rubber compounding ingredients in general last month held steady with good volume marked by an upward tendency. The manufacture of tires is proceeding at something better than 50 per cent of capacity, awaiting spring revival of automobile production. Mechanical rubber goods production is gaining with the progress of the general industrial improvements. It is notable that the long-maintained low prices for reclaimed rubber have seriously curtailed the consumption of and reduced the prices on the three cheapest fillers used in rubber compounding: namely, whiting, clay, and mineral rubber.

ACCELERATORS. The consumption of accelerators is well established in compounding practice as illustrated by the fact that an accelerator of some sort is used even in cheap lines of rubber products.

ANTIOXIDANTS. The use of antioxidants continues to extend because they are differentiated as to their adaptability in order to meet the conditions present under various typical forms of deterioration.

BENZOL. A fair improvement has marked the demand for benzol the past month with new business in small volume. The manufacture of benzol as a by-product of the coke industry is thereby closely related to the activity of the steel plants. The latter are at present operating at about 75 per cent of capacity.

CARBON BLACK. In the last week of February the price declined ½-cent a pound. In the middle of March the price trend was again downward, but soon strengthened owing to improved demand from the rubber trade. Palmer black is now being offered to the rubber industry. Its quality is said to meet every requirement of standard manufacturing tests.

CLAY. The demand for compounding clays runs into large tonnage with prices abnormally low.

LITHARGE. The demand for this material showed some increase, following a reduction of ¼-cent per pound effective March 7. After the middle of the month demand slackened somewhat.

LITHOPONE. The rubber trade demand for lithopone was fair at the beginning of the month and improved towards its end.

MINERAL RUBBER. The demand for the better grades of M. R. is well maintained despite the competition of low grade qualities and cheap reclaims.

V. M. & P. NAPHTHA. Throughout the entire month this material held firm in price with active demand.

SOFTENERS. All varieties of softeners moved freely because they are recognized as essential to modern rubber compounding practice. Prices hold firm without notable change.

STEARIC ACID. This ingredient has been fully demonstrated as an essential in stabilizing or standardizing curing quality. In consequence it is in steady demand in the rubber industry. The similarly functioning material Laurex is gaining favor with rubber compounders.

ZINC OXIDE. The rubber trade demand is an important factor in the consumption of zinc oxide in its various qualities. The seasonal demand has recently improved distinctly in anticipation of enlarged tire production schedules.

New York Quotations

March 25, 1930

Abrasives			
Pumice stone, pwd.	lb.	$0.02½ @	$0.04
Rottenstone, domestic	ton	.02½ @	.04½
Accelerators, Inorganic			
Lead, carbonate	lb.	.08½ @	
red	lb.	.09¼ @	
sublimed blue	lb.	.07¾ @	
sublimed white	lb.	.07¾ @	
super-sublimed white	lb.	.08 @	
Lime, R. M. hydrated	ton	20.00 @	
Litharge	lb.	.08¼ @	
Magnesia, calcined heavy	ton	75.00 @	
carbonate	lb.	.08¾ @	.11
Orange mineral A.A.A.	lb.	.11¼ @	
Accelerators, Organic			
A-1 (Thiocarbanilid)	lb.	.22 @	.27
A-5-10	lb.	.31 @	.36
A-7	lb.	.55 @	.65
A-11	lb.	.62 @	.75
A-16	lb.	.57 @	.65
A-19	lb.	.58 @	.75
A-20	lb.	.64 @	.80
A-32	lb.	.80 @	.95
Accelerator 49	lb.	.36 @	.40
Aldehyde ammonia	lb.	.65 @	.70
Anhydro formaldehyde aniline	lb.	.40 @	.42½
Butene	lb.	@	
Captax	lb.	.60 @	.70
Crylene	lb.	@	
paste	lb.	@	
D. B. A.	lb.	@	
D. O. T. G.	lb.	.42 @	.47
D. P. G.	lb.	.30 @	.35
Ethylidine aniline	lb.	.45 @	.47½
Heptene	lb.	@	
base	lb.	@	
Hexamethylenetetramine	lb.	.58½ @	.61
Lead oleate, No. 999	lb.	.15 @	
Witco	lb.	.14 @	
Lithex	lb.	@	
Methylene aniline	lb.	.37½ @	.40
Monex	lb.	@	
Phenex	lb.	.70 @	.75
Pipsol	lb.	4.00 @	4.50
Plastone	lb.	@	
R-2	lb.	1.75 @	2.15
base	lb.	4.50 @	5.00
R & H 40	lb.	.40 @	.42½
50	lb.	.40 @	.42½
Safex	lb.	@	
S-P-D-X	lb.	.70 @	.75
Super-sulphur No. 1	lb.	.50 @	.52
No. 2	lb.	.18 @	.25
Tensilac 39	lb.	.40 @	.42½
No. 41	lb.	@	
Thermlo F	lb.	@	
Trimene	lb.	@	
base	lb.	@	
Tuads	lb.	3.25 @	3.50
Ureka	lb.	.70 @	1.00
V. G. B.	lb.	@	
Waxene	lb.	.30 @	.40
Z. B. X.	lb.	@	
Z-88	lb.	.50 @	.60
Zimate	lb.	4.00 @	5.00
Acids			
Acetic 28% (bbls.)	100 lbs.	$3.88	@$4.13
glacial (carboys)	100 lbs.	14.18	@14.43
Sulphuric, 66°	ton	15.50 @	
Alkalies			
Caustic soda, 76% solid	100 lbs.	2.90	@ 3.00
Antioxidants			
Age-Rite, powder	lb.	.57 @	.62
resin	lb.	.57 @	.62
white	lb.	1.25 @	1.40
Albasan	lb.	@	
Antox	lb.	@	
Oxynone	lb.	.68 @	.90
Resistox	lb.	.54 @	.65
Stabilite	lb.	.57 @	.62
Stabilite-Alba	lb.	.70 @	.75
Sunproof	lb.	@	
Binders, Fibrous			
Cotton flock, dark	lb.	.10 @	.11
dyed	lb.	.50 @	.70
white	lb.	.12 @	.25
Colors			
BLACK			
Bone	lb.	.09½ @	
Carbon (see Reenforcers)			
Drop (bbls.)	lb.	.05½ @	.15
Lampblack (commercial)	lb.	.07 @	.08
BLUE			
Huber, brilliant	lb.	3.50 @	4.00
Prussian	lb.	.35 @	.37
Ultramarine	lb.	.06 @	.30
BROWN			
Huber mocha	lb.	1.60 @	2.10
Sienna, Italian, raw	lb.	.05½ @	.12½
GREEN			
Chrome, light	lb.	.27 @	.31
medium	lb.	.28 @	.31
Chromium oxide	lb.	.33 @	.37
Huber brilliant	lb.	3.75 @	4.25
ORANGE			
Huber Persian	lb.	.50 @	1.00
RED			
Antimony Crimson, R. M. P. No. 3	lb.	.48 @	
Sulphur, free	lb.	$0.52 @	
7-A	lb.	.35 @	
Sulphuret, golden No. 60	lb.	.16 @	.20
Z-2	lb.	.22 @	
Huber brilliant	lb.	1.35 @	1.85
Colors (Continued)			
Red *(Continued)*			
Iron Oxides			
bright pure domestic	lb.	.10 @	
bright pure English	lb.	.14 @	
bright reduced English	lb.	.10 @	
bright reduced domestic	lb.	.09 @	
Indian (maroon), pure domestic	lb.	.10 @	
Indian (maroon), pure English	lb.	.11 @	
Indian (maroon) reduced English	lb.	.09½ @	
Indian (maroon) reduced domestic	lb.	.07 @	
Oximony	lb.	.13¼ @	
Spanish red oxide	lb.	.02½ @	.04
Sunburnt red	lb.	.14 @	
Venetian red	lb.	.02 @	.06
WHITE			
Lithopone	lb.	.05½ @	.05¾
Albalith	lb.	.05¾ @	.05½
Azolith	lb.	.05¼ @	.05¾
Grasselli	lb.	.05¼ @	.05¾
Titanium oxide, pure	lb.	.22 @	
Titanox "B"	lb.	.07¼ @	.07¾
Titanox "C"	lb.	.07¾ @	.08¼
Zinc Oxide			
AAA (lead free) (bbls.)	lb.	.07 @	
Azo (factory):			
ZZZ (lead free)	lb.	.06½ @	.07
ZZ (leaded)	lb.	.06¼ @	.06¾
Z (8% leaded)	lb.	.06¼ @	.06¾
Cryptone	lb.	.07¼ @	.07½
Green seal	lb.	.10¾ @	.10⅝
Kadox, black label	lb.	.10⅜ @	.10⅝
blue label	lb.	.09⅜ @	.09⅝
red label	lb.	.08 @	.08¼
Red seal	lb.	.09⅜ @	.09⅝
Special	lb.	.07 @	.07½
White seal	lb.	.11⅝ @	.11⅞
XX green	lb.	.07 @	.07¾
XX red	lb.	.06½ @	.06¾
Zinc sulphide	lb.	.16 @	.16¼
YELLOW			
Cadmium sulphide	lb.	1.80 @	2.00
Chrome	lb.	.17 @	.17½
Huber canary	lb.	2.80 @	3.30
Ochre, domestic	lb.	.01¾ @	.02¼
French	lb.	.03 @	
Oxide, pure	lb.	.09 @	
Zinc, C. P., imported	lb.	.21 @	
Factice—See Rubber Substitutes			
Fillers for Pliability			
Flex	lb.	.05 @	.08
Fumonex	lb.	.04½ @	.08
P-33	lb.	.06 @	.09
Thermax	lb.	.04 @	.07
Uncompressed	lb.	.05 @	.10
Velvetex	lb.	.04 @	.06

New York Quotations

March 25, 1930

Fillers, Ordinary

Asbestine	ton	$13.40	@$13.50
Baryta white (f.o.b. St. Louis, bbls.)	ton	23.00	@
Baryta white (f.o.b. St. Louis, paper bags)	ton	22.00	@
Barytes, pure white	ton	35.00	@
off color	ton	25.00	@
medium	ton	32.50	@
Foam "A" (f.o.b. St. Louis, bbls.)	ton	23.00	@
Foam "A" (f.o.b. St. Louis, bags)	ton	23.00	@
Basofor	lb.	.04½	@
Blanc fixe, dry	lb.	.04½	@
pulp	ton	42.50	@45.00
Infusorial earth	ton	45.00	@
Slate flour, gray (fact'y)	ton	7.00	@

Whiting

Domestic	100 lbs.	1.00	@
English, cliffstone	100 lbs.	1.50	@
Imported chalk	100 lbs.	.95	@ 1.25
Paris White, English cliffstone	100 lbs.	1.50	@ 3.50
Quaker	ton	13.00	@22.00
Sussex	ton	8.00	@15.00
Witco (l. c. l.) (f.o.b. New York)	ton	15.00	@

Finishes

Mica, amber	lb.	.04½	@
Shellac, fine orange	lb.	.60	@
Starch, corn	100 lbs.	3.62	@ 3.82
potato	lb.	.05½	@ .06

Inflating Material

Ammonium carb. pwd.	lb.	.10	@ .11
lump	lb.	.09½	@ .10

Lubricants

Soapbark (cut)	lb.	.09½	@ .10
Soapstone	ton	15.60	@22.00
Talc, domestic	lb.	.01¼	@
French	ton	18.00	@22.00
Pyrax A	ton	7.50	@

Mineral Rubber

Fluxrite (solid)	lb.		@
Genaseo (fact'y)	ton	50.00	@52.00
Gilsonite (fact'y)	ton	37.14	@39.65
Granulated M. R.	ton	30.00	@45.00
Hydrocarbon, hard	ton	24.00	@40.00
Ohmlac Kapak, M. R. (f.o.b. fact'y)	ton	60.00	@
M. 4 (f.o.b. fact'y)	ton	175.00	@
Paradura (fact'y)	ton	62.50	@65.00
Pioneer, M. R., solid fact'y	ton	40.00	@42.00
M. R. granulated	ton	50.00	@52.00
Robertson, M. R., solid (fact'y)	ton	34.00	@80.00
M. R. granulated	ton	38.00	@80.00

Oils

Kerosene	gal.	.15	@
Mineral	gal.	.20	@
Poppy seed oil	gal.	$1.70	@
Rapeseed	gal.	.70	@
Red oil, distilled	lb.	.10½	@ .10⅝
Rubber process	gal.	.25	@
Spindle	gal.	.30	@

Reenforcers

Aluminum flake (sacks, c.l.)	ton	21.85	@
(sacks l.c.l.)	ton	24.50	@
Carbon Black			
Aerfloted arrow	lb.	.05½	@ .11
Century (works, La., c. l.)	lb.	5.10	@
Compressed	lb.	.05	@ .10
Disperso (works, La., c. l.)	lb.	5.10	@
Gastex (f.o.b. fact'y)			
contracts	lb.	.04	@ .04¾
carload	lb.	.05½	@
less carload	lb.	.07	@
Micronex	lb.	.05½	@ .11
Clays			
Blue Ridge, dark	ton	9.00	@20.00
China	lb.	.01¾	@
Dixie	ton	15.00	@29.00
Langford	ton	10.00	@
Par	ton	7.00	@
Perfection	ton	25.00	@
Suprex	ton	8.00	@20.00
Glue, high grade	lb.	.25	@ .35

Rubber Substitutes or Factice

Black	lb.	.08	@ .14
Brown	lb.	.07½	@ .15
White	lb.	.09	@ .16

Softeners

Burgundy pitch	100 lbs.	5.00	@ 7.00
Atlas	100 lbs.	6.50	@
Corn oil, crude	lb.	.10	@
Cottonseed oil	lb.	.11	@
Cycline oil	lb.	.25	@ .34
Degras	lb.	.03¼	@ .04½
Fluxol	ton	18.00	@80.00
Fluxrite (fluid)	lb.		@
Laurex, ton lots	lb.		@
Palm oil (Lagos)	lb.	.09¼	@
Palm oil (Niger)	lb.	.08¾	@
Palm oil (Witco)	lb.	.08½	@
Para-flux	gal.	.17	@
Petrolatum, snow white	lb.	.08	@ .08¾
Pigmentar	lb.	.02½	@ .03
Pigmentaroil (tank cars, factory)	gal.	.18	@
(bbls., drums)	gal.	.24	@
Pine oil, dest distilled	gal.	.55	@ .56
Pine pitch	lb.	.04	@
Pine tar (retort)	gal.	.28	@
Rosin K (bbls.)	280 lbs.	9.25	@

Softeners (Continued)

Rosin oil compounded	gal.	$0.30	@
No. 3, deodorized	gal.	.58	@
No. 556, deodorized	gal.	.49	@
Rubber seed, drums	lb.	.09½	@
Rubtack	lb.	.10	@
Stearex	lb.	.14	@ .20
Stearic acid, double pressed	lb.	.14½	@ .15
Tackol	lb.	.09	@ .18
Tonox	lb.		@
Witco No. 20	gal.	.17	@
Woburn oil	lb.		@
Wobonite No. 94	lb.	.03½	@

Solvents

Benzol (90% drums)	gal.	.27	@
Carbon bisulphide (drums)	lb.	.05½	@ .11
tetrachloride (drums)	lb.	.06½	@ .07
Dip-Sol	gal.	.12	@
Dryolene, No. 9	gal.	.09½	@
Gasoline			
No. 303			
Drums, c. l.	gal.	.20	@
Tankcars	gal.	.16	@
Rub-Sol	gal.	.08½	@
Solvent naphtha (tanks)	gal.	.28	@
Stod-Sol	gal.	.09	@
Turpentine, Venice	lb.	.20	@
dest distilled	gal.	.40	@ .43

Vulcanizing Ingredients

Sulphur			
Rubber sulphur	100 lbs.	1.75	@ 2.50
Soft rubber (c.l.)	100 lbs.		@
(l.c.l.)	100 lbs.		@
Sulphur chloride	lb.	.03½	@ .04
Superfine commercial flour (bbls.)	100 lbs.	2.55	@ 3.10
(bags)	100 lbs.	2.20	@ 2.80
Tire brand, superfine,	100 lbs.		@
Tube brand, velvet	100 lbs.		@
Velvet flour (240 lb. bbls.)	100 lbs.	2.95	@ 3.50
(150 lb. bags)	100 lbs.	2.60	@ 3.15
Vandex	lb.	1.80	@ 2.10

(See also Colors—Antimony)

Waxes

Beeswax, white, com.	lb.	.55	@
carnauba	lb.	.33	@
ceresine, white	lb.	.12½	@
montan	lb.	.06½	@
ozokerite, black	lb.	.28	@
green	lb.	.28	@
Paraffin			
122/124 crude, white scale	lb.	.03¼	@
124/126 crude, white scale	lb.	.03¼	@
125/127 fully refined	lb.	.04¼	@

Miscellaneous Supplies

Mold Solution			
Rusco mold paste	lb.	.12	@ .30

British Malaya

RUBBER EXPORTS

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S. W. 1, England, states that the amount of rubber exported from British Malaya in January, 1930, totaled 49,724 tons as compared with 48,513 tons in December last and 52,546 tons in the corresponding period of 1929. The amount of rubber imported was 11,773 tons of which 8,562 tons were declared as wet rubber, and 3,211 tons as dry rubber.

The following are the figures for February, 1930, of the ocean shipments from Singapore, Penang, Malacca, and Port Swettenham:

Destination of Shipments

	Rubber Tons	Latex Tons
United Kingdom	9,980	26
United States	30,943	60
Continent of Europe	5,261	56
British possessions	685	..
Japan	1,844	1
Other countries	91	..
Totals	48,804	143

Actual imports by land and sea during February, 1930:

	Dry Rubber Tons	Wet Rubber Tons
Sumatra	567	5,783
Dutch Borneo	424	3,547
Java and other Dutch Islands	158	66
Sarawak	849	21
British Borneo	234	17
Other countries	944	350
Totals	3,176	9,784

Tire Production Statistics

	High Pressure Pneumatic Casings					
	All Types			Cord		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1929	.....	54,980,672	55,513,206	.....	13,771,306	15,020,707
1930						
January	9,539,353	3,558,862	3,525,404	2,382,959	804,783	713,713

	Balloon Casings			Solid and Cushion Tires		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1929	.....	41,128,577	40,377,781	.....	406,356	431,798
1930						
January	7,139,154	2,779,864	2,805,740	126,784	25,049	21,476

	High Pressure Inner Tubes			Balloon Inner Tubes		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1929	.....	16,104,012	17,721,807	.....	38,921,749	38,719,177
1930						
January	3,233,813	783,709	889,208	6,911,422	2,898,682	2,992,752

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires	
	Cotton Fabric Pounds	Crude Rubber Pounds
1929	208,824,653	583,039,984
1930		
January	14,559,163	42,108,149

Rubber Manufacturers Association figures representing 75 per cent of the industry.

Cotton and Fabrics

American Cotton

THE spot price of American middling cotton broke sharply the last week in January, continued downward through February, and closed at 14 cents on March 10 in the New York market. On this date the price at ten designated spot markets averaged 13.67 cents per pound, the lowest figure since the April 1926-27 season, when the supply of American cotton was more than 4,000,000 bales greater than for the present year. For February the price averaged 15.52 cents compared with 18.04 cents for August and 18.86 cents for February, 1929.

Figures of the Census Bureau's report offer some explanation of the market's trend: "Exports for the season to March 1 totaled 5,293,000 bales, 897,000 less than for the corresponding period last year, and February alone showed a decrease of more than 200,000 bales below the exports for that month a year ago."

The United States consumed during February 100,000 bales less than it did for that month in 1929, and the total curtailment since November 1 has been 337,000 bales, as compared with the corresponding months last year. As a result of the lower domestic consumption and the decrease in exports, together with a slightly larger carryover from last season, the apparent stocks of American cotton remaining in the United States on March 1 amounted to 8,100,000 bales, compared with 6,800,000 last year.

Harriss & Vose on March 8 said: "The economics of the problem are fairly simple. It is obvious that the United States must keep on raising cotton in quantities sufficient for, but no greater than the world needs; otherwise it would relinquish to foreign countries one of its greatest heritages. It is equally obvious that it must raise the cotton efficiently and at a cost which will take advantage of the natural endowments of the South, and compete even with those countries where labor is cheaper."

While it has been our habit to consider cotton as the great agricultural staple in which this country could boast of a monopoly, the foundation for such claims recently has grown less substantial. From over 75 per cent of the world's cotton crop originally contributed by America, our production has decreased recently in relative bulk to but little over 50 per cent, and *The Journal of Commerce* for February 24 reads, "A late estimate by competent authority states that during 1929-30 the United States will supply only 40 per cent of the cotton consumed in foreign countries;" and the report of the International Federation of Master Spinners quoted in *The New York Times* states, "While the world, for this season, has used less American cotton, it has used much more of other kinds, making the takings actually a record, of course at the expense of American cotton. The moral of this showing is the necessity for American producers to learn to grow cotton at lower prices, or see the supremacy of American cotton wane in the world markets."

As a remedy Munds & Winslow in *The Journal of Commerce* for March 1 suggested: "The development of cultural methods along the lines of better farming will furnish a remunerative margin for the American producers and at the same time prove too low for foreign competition, providing an abundance of raw material of superior quality for the consuming manufacturer and restoring prosperity to the cotton farmer's only customer, the textile industry."

In support of the statement the article cites a Farmer's Bulletin of the Department of Agriculture wherein is described cotton

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
Mar. 1	15.15
Mar. 8	14.53
Mar. 15	14.48
Mar. 22	15.55

New York Quotations

March 25, 1930

Drills

38-inch 2.00-yard	yard	$0.14½ @
40-inch 3.47-yard		.08⅝ @
50-inch 1.52-yard		.19¾ @
52-inch 1.90-yard		.16 @
52-inch 2.20-yard		.14½ @
52-inch 1.85-yard		.16½ @

Ducks

38-inch 2.00-yard D. F.	yard	.15½ @
40-inch 1.45-yard S. F.		.21⅜ @
72-inch 1.05-yard D. F.		.32½ @
72-inch 16.66-ounce		.34⅜ @
72-inch 17.21-ounce		.35½ @

MECHANICAL

Hose and belting	pound	.33 @

TENNIS

52-inch 1.35 yard	yard	.22½ @

Hollands

RED SEAL

36-inch	yard	.14 @
40-inch		.15 @
50-inch		.19½ @

GOLD SEAL

40-inch, No. 72	yard	.18½ @
40-inch, No. 80		.19½ @

Osnaburgs

40-inch 2.35-yard	yard	$0.13 @
40-inch 2.48-yard		.12⅜ @
40-inch 3.00-yard		.10 @
40-inch 10-oz. part waste	lb.	.15¼ @
40-inch 7 oz.	lb.	.11 @
37-inch 2.42-yard	yard	.12⅝ @

Raincoat Fabrics

COTTON

Bombazine 64 x 60	yard	.10¼ @
Bombazine 60 x 48		.09¼ @
Plaids 60 x 48		.11½ @
Plaids 48 x 48		.10½ @
Surface prints 64 x 60		.12¼ @
Surface prints 60 x 48		.11½ @
Print cloth, 38½-in., 60 x 48		.05¼ @
Print cloth 38½-in., 64 x 60		.06½ @

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.10¼ @ .10½
48 x 48, 2.85-yard		.09⅛ @
64 x 68, 3.15-yard		.10 @
56 x 60, 3.60-yard		.08¾ @
44 x 48, 3.75-yard		.07⅛ @ .07¼
44 x 40, 4.25-yard		.06¼ @

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	.05⅞ @ .06
44 x 40, 6.15-yard		.05 @

Tire Fabrics

SQUARE WOVEN 17¼-ounce

Peeler, karded	pound	$0.42 @

BUILDER 23/11

Peeler, karded	pound	.42 @

BUILDER 10/5

Peeler, karded	pound	.39 @

CORD 23/5/3

Peeler, karded	pound	.42 @

CORD 23/4/3

Peeler, karded	pound	.44 @

CORD 23/3/5

Peeler, karded	pound	.47 @

CORD 15/3/5

Peeler, karded	pound	.40 @

CORD 13/3/3

Peeler, karded	pound	.39 @

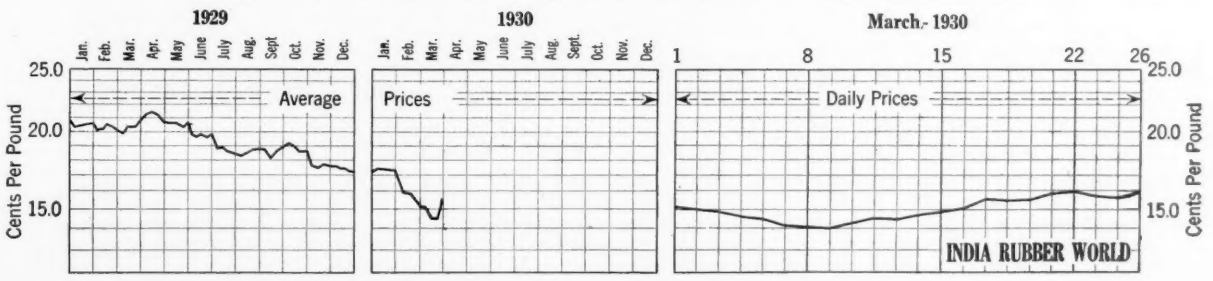
LENO BREAKER

8-oz. Peeler, karded	pound	.42 @
10-oz. Peeler, karded		.42 @

CHAFER

9.5-oz. Peeler, karded	pound	.45 @
12-oz. Peeler, karded		.43 @
14-oz. Peeler, karded		.42 @

New York Cotton Exchange Daily Prices of Spot Middling Upland Cotton



production of as high as 7 bales to the acre, grown without the use of fertilizer.

On the subject of acreage reduction Harriss & Vose on March 1 declared, "In ten states the machinery of the acreage reduction campaign has been set in operation. The full force of the radio, state colleges of agriculture, chambers of commerce, banks, and luncheon clubs has been enlisted and is already at work. The campaign aims at a cut of 2,000,000 bales, or a crop of less than 13,000,000. At one stroke the farmer can solve the existing market problem. That is what he *can* do. The practical question is what he will do."

Geo. H. McFadden & Bro. writes: "Under all the bearish factors in the market is the fear of an insufficient decrease in the acreage next year and the possibility of a larger crop. The first item is one, however, which should be correcting itself daily, as the further cotton declines now, the more acreage should be reduced."

The New York Times reads, "A local trade publication estimates probable reduction in acreage at 3 to 6 per cent, on replies secured from both eastern and western sections of the Cotton Belt," and members of the Farm Board believe a reduction of 12 to 15 per cent to be essential to restore profitable prices to the producer.

Lamborn, Hutchings & Co. said, "The mastery of the situation seems now to have passed to those who favor the constructive side, and let us not forget the important feature that we are now at the psychological period for the rather usual spring rise."

The final ginning report of the 1929 crop showed 14,544,584 bales ginned, which reduced to 500-pound bales makes a total of 14,821,429, a return somewhat under general expectations. The market continued to rise through the last week, gaining more than a cent a pound over the closing price of the previous week.

The respective price levels of old and new cotton crops is of increasing interest at this time. The volume of the new crop is figured at 14,460,000 bales. Harriss & Vose state that there are in this country 1,000,000 bales excess, which is not surplus but simply congestion on this side of the Atlantic. This condition will promptly be relieved next season when, considering the low price and the improved statistical position of foreign cotton, American annual consumption will return to about 15,000,000 bales.

During the week ending March 1 the market was inactive with narrow fluctuations, and was said to be groping for a price that would fairly gage both the economic factors and the acreage probabilities for the new crop. Cotton seems to have been unusually sensitive to the course of the wheat market. The *Textile World* reads, "Perhaps the indications that the break in wheat had attracted support from the cooperative marketing organization, was regarded as a forerunner of what might happen to cotton."

During the week ending March 8 on each consecutive day cotton sold lower than on the preceding one, until the prices all but reached the 14-cent level and stood at the lowest for the season. The Cotton Exchange reported the Garside figures for the consumption of American lint cotton for the six months ending January 31 at 7,127,000 bales. The report estimates that consumption for the second half year will be no larger than for the first.

The third week ending March 15 opened with cotton at 14 cents, but it rose through the week nearly a cent a pound. Mills both domestic and foreign are reported to have been satisfied to replenish their supplies.

On March 21 New York closing prices were May 15.78 to 15.79, July 15.83 to 15.85, October (old) 15.67 to 15.68.

On March 24 the market opened barely steady at 15 to 29 points decline. The close was steady at a decline of 22 to 28 points. May sold 15.62 (high) at opening and 15.38 (low) at noon.

On March 25 spot middlings were 10 points up at 15.80 cents. March 26 prices had moved up to 16 cents.

Summarizing conditions that will affect the cotton market Dr. Haney gives among others:

Bull Points

1. Active propaganda to reduce acreage.
2. Increased mill and spindle activity in January.
3. Foreign stocks of American cotton below last year.
4. Price now in normal relation to commodity prices and about as low as statistics would justify.

Bear Points

1. The declining trend in commodity prices.
2. The drop in silver affecting unfavorably business in the Orient and South America.
3. Foreign cottons are relatively cheaper than American cotton of similar grade.
4. A lower world consumption for the season.
5. Tire fabric consumption lowest since 1923.
6. January textile production exceeded sales.

Egyptian Cotton

During the past month the basis on all staples remained firm. In Egypt the prices of old crop Sakels and Uppers have not varied from the limits fixed by the Egyptian Government, but new crop deliveries have been weak. Fall shipments of Uppers dropped to a discount of about two cents, and present indications are that the acreage in Egypt now sown is about 15 per cent larger than last year.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. The outstanding feature of the market in March was the sharp decline in cotton futures followed by a break in fabric prices. The price of cotton has recovered about $8 a bale from the low. This resulted in more interest in the fabric situation by both jobbers and consumers. Trade is expected to operate on a hand-to-mouth basis. Cloths are exceedingly low in price. This seems to be favorable for long-pull engagement. As usual, buyers show less interest at bottom prices than at the higher price ranges. Continued activity is expected for transactions covering quick and nearby shipments.

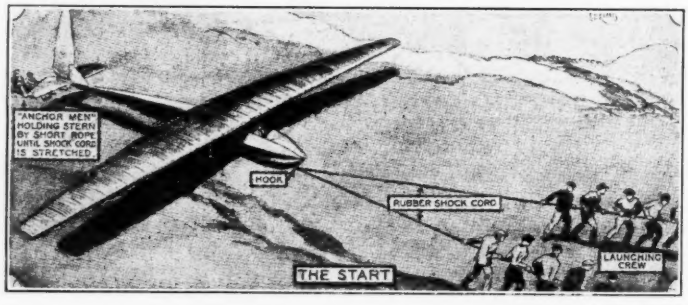
RAINCOAT FABRICS. The raincoat trade is very quiet because it is still early in the season. Much interest, however, is being taken in the style and variety of novelty raincoat fabrics recently exhibited in New York for spring and summer wear. These include many beautiful and unusual effects in rayon piqué, sport flanoteen, prints, batiste, rayon, flat crepe, zamora lustre, and dimity.

SHEETINGS. Sheetings have experienced a rally due to the rise of raw cotton. Prices advanced from ⅛- to ¼-cent a yard above the bottom. Business is gaining fair sized volume from all sources.

TIRE FABRICS. There has been but little change in the tire fabric situation in the last month. While a new low price on cotton was reached, it did not induce many inquiries or purchases. Tire business has not yet picked up enough to warrant much increase of production on the part of the mills. There are indications, however, of some increase in April business and output.

Gliders Launched by Rubber Cord

Interest in the operation of motorless planes or gliders is said to bid fair to bring gliding into popularity as a sport. As there is no motor to give them flying speed, gliders must be launched. Various methods are employed to give them their initial impetus. The most common is that of the catapult. Ropes of rubber cord are attached to an open hook in the glider's nose. A group of three or four men on each side of the craft—which is held down meanwhile—move forward and outward till these cords are stretched in a big V. At the word from the pilot the glider is released, the launchers run forward, and the motorless craft is literally snapped into the air like a missle from a small boy's slingshot.



N. Y. Times

How a Glider Is Snapped into the Air

Reported Rubber Arrivals at New York

Plantations

	Cases
Feb. 17. By "Steel Navigator," Far East.	
General Rubber Co.	4,194
Chas. T. Wilson Co., Inc.	263
Feb. 17. By "Waukegan," Far East.	
H. Muehlstein & Co., Inc.	176
Feb. 19. By "Bolton Castle," Far East.	
General Rubber Co.	4,061
H. Muehlstein & Co., Inc.	130
Chas. T. Wilson Co., Inc.	1,683
Feb. 19. By "Pres. Garfield," Far East.	
General Rubber Co.	1,720
Adolph Hirsch & Co., Inc.	28
H. Muehlstein & Co., Inc.	1,510
Chas. T. Wilson Co., Inc.	489
Feb. 19. By "Priam," Far East.	
General Rubber Co.	3,307
H. Muehlstein & Co., Inc.	71
Chas. T. Wilson Co., Inc.	584
Feb. 20. By "City of Auckland," Far East.	
General Rubber Co.	200
Feb. 23. By "Batoe," Far East.	
General Rubber Co.	†650
H. Muehlstein & Co., Inc.	†925
Feb. 24. By "Andania," London.	
H. Muehlstein & Co., Inc.	350
Feb. 24. By "Oakbank," Far East.	
General Rubber Co.	200
Chas. T. Wilson Co., Inc.	200
Feb. 24. By "Siamese Prince," Far East.	
General Rubber Co.	5,436
Adolph Hirsch & Co., Inc.	66
H. Muehlstein & Co., Inc.	2,180
Chas. T. Wilson Co., Inc.	2,337
Feb. 24. By "Silverbeech," Far East.	
General Rubber Co.	3,905
H. Muehlstein & Co., Inc.	1,350
Chas. T. Wilson Co., Inc.	570
Feb. 25. By "Kangean," Far East.	
General Rubber Co.	6,784
H. Muehlstein & Co., Inc.	510
Chas. T. Wilson Co., Inc.	608
Feb. 27. By "Bloomersdyk," Far East.	
General Rubber Co.	2,040
H. Muehlstein & Co., Inc.	555
Chas. T. Wilson Co., Inc.	140
Feb. 27. By "Matheran," Far East.	
General Rubber Co.	560
H. Muehlstein & Co., Inc.	672
Mar. 3. By "Maryland," Far East.	
General Rubber Co.	30
H. Muehlstein & Co., Inc.	*660
Mar. 3. By "Minnekahda," London.	
H. Muehlstein & Co., Inc.	160
Mar. 4. By "Pres. Polk," Far East.	
General Rubber Co.	1,424
H. Muehlstein & Co., Inc.	3,100
Chas. T. Wilson Co., Inc.	1,328
Mar. 4. By "Silverspruce," Far East.	
General Rubber Co.	†900
Mar. 6. By "City of Osaka," Far East.	
General Rubber Co.	20
Chas. T. Wilson Co., Inc.	400
Mar. 7. By "Malayan Prince," Far East.	
General Rubber Co.	4,162
H. Muehlstein & Co., Inc.	330
Chas. T. Wilson Co., Inc.	1,287
Mar. 8. By "Ohio Maru," Far East.	
H. Muehlstein & Co., Inc.	400
Mar. 10. By "Minnewaska," London.	
H. Muehlstein & Co., Inc.	876
Mar. 11. By "Agapenor," Far East.	
General Rubber Co.	2,215
H. Muehlstein & Co., Inc.	1,300
Chas. T. Wilson Co., Inc.	922
Mar. 11. By "Fairfield City," Far East.	
General Rubber Co.	3,674
Chas. T. Wilson Co., Inc.	400
Mar. 11. By "Muncaster Castle," Far East.	
General Rubber Co.	‡4,844
H. Muehlstein & Co., Inc.	410
Chas. T. Wilson Co., Inc.	750
Mar. 12. By "Markhor," Far East.	
General Rubber Co.	912
H. Muehlstein & Co., Inc.	2,200
Chas. T. Wilson Co., Inc.	640
Mar. 12. By "Pres. Hayes," Far East.	
General Rubber Co.	‡†650
Mar. 12. By "Steel Worker," Far East.	
General Rubber Co.	641
H. Muehlstein & Co., Inc.	580
Chas. T. Wilson Co., Inc.	396
Mar. 14. By "Buitenzorg," Far East.	
Chas. T. Wilson Co., Inc.	525
Mar. 14. By "Urbino," Far East.	
Chas. T. Wilson Co., Inc.	1,000

* Arrived at Boston.
† Arrived at Los Angeles.
‡ Estimated.

Balata

Mar. 12. By "Basil," Brazil.	
General Rubber Co.	87

Guayule

Feb. 28. By "El Dia," Mexico.	
Continental Rubber Co. of N. Y.	560
Mar. 4. "El Coston," Mexico.	
Continental Rubber Co. of N. Y.	1,120
Mar. 14. By "El Mundo," Mexico.	
Continental Rubber Co. of N. Y.	560

Paras and Caucho

Feb. 24. By "Francis," Brazil.	
General Rubber Co.	700
Mar. 12. "Basil," Brazil.	
General Rubber Co.	518

Rubber Latex

Feb. 24. By "Silverbeech," Far East.	
General Rubber Co.	gals 66,094

Reported Rubber Stocks

Long Tons—1929 / 1930

Producing Centers	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Singapore	28,248	28,582	25,974	27,949	28,475	32,074
Penang	6,043	6,365	4,989	5,208	4,993	5,476
Para	3,462	2,955	3,237	3,103	3,447	3,545
Totals	37,753	37,902	34,200	36,260	36,915	41,095
Manufacturing Centers						
London	42,188	47,803	52,454	54,304	60,434	62,725
Liverpool	10,026	13,903	17,655	18,949	19,849	19,704
Amsterdam	2,203	2,222	2,150	2,179	2,134	.....
United States	84,362	88,483	92,219	105,138	120,649	131,748
Plantations afloat*	94,252	89,200	88,869	90,840	94,828	.....
Totals	233,031	241,611	253,347	271,410	297,894	.....
Grand totals	270,784	279,513	287,547	307,670	334,809	.....

*W. H. Rickinson & Son, *The World's Rubber Position.*
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

Low and High New York Spot Prices

Plantations	March 1930*	March 1929	March 1928
Thin latex crepe	$0.15¾@$0.16¼	$0.22¼@$0.26½	$0.24 @$0.29½
Smoked sheet, ribbed	.14⅞@ .15¾	.21⅝@ .26⅛	.23¾@ .29⅛
Paras			
Upriver, fine	.16½@ .16¾	.23 @ .27	.21¾@ .25¼
Upriver, coarse	.07¾@ .08¾	.13½@ .17½	.16¾@ .21
Upper caucho ball	.08 @ .08½	.13½@ .17	.16¾@ .21

*Figured to March 25, 1930.

Rubber in Cave Exploring

Carlsbad Cavern in the Guadalupe Mountains in southeast New Mexico, in which it is said that Mammoth Cave, Ky., could be almost lost, has already been searched for 25 miles; but two explorers, confident that the cavern has not revealed half of its wonders, are planning to go the limit in examination. Their special equipment will include rubber helmets, rubber duck-hunting suits, a collapsible rubber boat for searching the subterranean streams, and a rubber balloon to lift them to the ceilings of rooms, some of which are 358 feet high.

World Rubber Absorption

Long Tons

Consumption	Calendar Years 1927	Calendar Years 1928	12 Months' Running Totals, 1929 Sept.	Oct.	Nov.	Dec.
United States	373,000	437,000	488,073	482,036	472,296	464,644
United Kingdom	44,800	48,504	66,799	67,289	68,556	72,023
Net Imports						
Australia	9,516	8,430	14,850	15,209	15,915	15,886
Belgium	6,491	7,958	9,075	9,526	9,343	9,445
Canada	26,386	30,447	37,169	36,047	35,957	35,453
France	34,274	36,498	53,887	54,648	58,701	59,342
Germany	38,892	37,855	49,773	48,742	48,824	49,078
Italy	11,290	12,433	16,392	17,181	17,116	17,169
Japan	20,521	25,621	33,773	33,964	35,035	34,284
Russia	12,695	15,134	*9,000	*9,000	*9,000	*9,000
Other reported	7,908	10,365	13,646	13,855	14,340	*15,000
Other estimated	8,093	*11,000	*11,000	*11,000	*11,000	*11,000
Grand totals	593,866	681,245	803,437	798,497	796,083	792,324
Minus United States	373,000	437,000	488,073	482,036	472,296	464,644
Total foreign	220,866	244,245	315,364	316,461	323,787	327,680

* Provisional figure.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

World Rubber Production—Net Exports

Long Tons—1929

British Malaya	Total 1928	July	Aug.	Sept.	Oct.	Nov.	Dec.
Gross exports	409,500	46,454	50,441	53,484	47,937	46,279	48,513
Imports	149,787	15,071	15,469	12,392	12,516	11,204	13,451
Net	259,713	31,383	34,972	41,092	35,421	35,075	35,062
Ceylon	57,267	5,746	5,564	7,961	8,411	7,195	8,683
India and Burma	10,790	974	685	384	812	1,065	900
Sarawak	10,087	1,247	993	832	1,047	668	930
B. N. Borneo	6,698	641	641	640	*600	*600	*600
Siam	4,813	462	431	406	485	278	320
Java and Madura	58,848	6,422	4,664	4,708	4,697	4,760	5,189
Sumatra E. Coast	82,511	7,192	7,298	7,517	8,295	6,711	8,279
Other N. E. Indies	121,671	13,995	10,782	10,149	10,512	9,380	11,102
French Indo-China	9,616	555	545	755	893	771	966
Amazon Valley	21,129	1,457	1,563	1,566	1,606	1,442	1,674
Other America	1,490	148	24	79	46	104	67
Mexican Guayule	3,076	200	190	107	200	125	100
Africa	6,124	295	285	318	199	306	276
Totals	653,833	70,717	68,637	76,514	73,224	68,480	74,148

* Estimated.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

Rubber Questionnaire

Fourth Quarter 1929*

	Long Tons			
	Inventory at End of Quarter	Production	Shipments	Consumption
RECLAIMED RUBBER				
Reclaimers solely (7)	8,360	15,970	14,875	18
Manufacturers who also reclaim (27)	9,864	23,665	7,913	18,790
Other manufacturers (74)	3,996	.....	.....	14,513
Totals	22,220	39,635	22,788	33,321

	Long Tons		
SCRAP RUBBER	Inventory	Consumption	Due on Contract
Reclaimers solely (7)	31,419	20,412	2,605
Manufacturers who also reclaim (19)	43,484	32,090	7,671
Other manufacturers (12)	348	.....	.....
Totals	75,251	52,502	10,276

TONS OF RUBBER CONSUMED IN RUBBER PRODUCTS AND TOTAL SALES VALUE OF SHIPMENTS

PRODUCTS	Crude Rubber Long Tons	Total Sales Value of Shipments of Manufactured Rubber Products
Tires and Tire Sundries:		
Automobile and motor truck pneumatic casings	48,244	$102,267,000
Automobile and motor truck pneumatic tubes	10,096	14,758,000
Motorcycle tires (casings and tubes)	47	199,000
Bicycle tires (single tubes, casings, and tubes)	401	631,000
Airplane casings and tubes	25	63,000
Solid and cushion tires	1,873	3,149,000
All other solid tires	106	320,000
Tire sundries and repair materials	792	3,614,000
Totals	61,584	$125,001,000
PRODUCTS		
Other Rubber Products:		
Mechanical rubber goods	4,692	$23,200,000
Boots and shoes	5,534	36,301,000
Insulated wire and insulating compounds	1,050	8,230,000
Druggists' sundries, medical and surgical rubber goods	469	1,545,000
Stationers' rubber goods	280	601,000
Bathing apparel	155	234,000
Rubber clothing	356	2,610,000
Automobile fabrics	252	1,892,000
Other rubberized fabrics	681	2,904,000
Hard rubber goods	236	1,679,000
Heels and soles	1,677	5,792,000
Rubber flooring	282	1,189,000
Sporting goods, toys, and novelties	362	1,356,000
Miscellaneous, not included in any of the above items	472	2,482,000
Totals	16,498	$90,015,000
Grand totals—all products	78,082	$215,016,000

INVENTORY OF RUBBER IN THE UNITED STATES AND AFLOAT

	Long Tons			
ON HAND	Plantation	Para	All Other	Totals
Manufacturers	59,236	1,715	574	61,525
Importers and dealers	39,202	1,845	548	41,595
Totals on hand	98,438	3,560	1,122	103,120
AFLOAT				
Manufacturers	12,101	....	4	12,105
Importers and dealers	39,837	358	50	40,245
Totals afloat	51,938	358	54	52,350

*Number of rubber manufacturers that reported data was 160; crude rubber importers and dealers, 51; reclaimers (solely), 7; total daily average number of employes on basis of third week of October, 1929, was 160,193.

It is estimated that the reported grand total crude rubber consumption and the grand total sales value figures to be approximately 92 per cent; the grand total crude rubber inventory figures 95 per cent, and afloat figures 80 per cent; the reclaimed rubber production 93 per cent, reclaimed consumption 73 per cent, and reclaimed inventory 78 per cent of the total for the entire industry.

Compiled from statistics supplied by the Rubber Manufacturers Association, Inc.

Dominion of Canada Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	September, 1929		Six Months Ended September, 1929	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Rubber, gutta percha, etc.	4,273,871	$895,389	38,486,306	$8,235,905
Rubber recovered	1,006,300	68,892	9,357,700	642,404
Rubber and gutta percha scrap	347,500	19,853	2,884,700	116,403
Balata	20	24	2,914	1,658
Rubber substitutes	111,900	21,132	1,082,100	90,153
Totals	5,739,591	$1,005,290	51,813,720	$9,086,523
PARTLY MANUFACTURED				
Hard rubber sheets and rods	9,006	$3,465	142,915	$44,430
Hard rubber tubes	.....	5,285	.....	10,840
Rubber thread not covered	16,354	16,158	129,972	123,080
Totals	25,360	$24,908	272,887	$178,350
MANUFACTURED				
Belting	.....	$15,287	.....	$104,305
Hose	.....	25,774	.....	165,404
Packing	.....	4,197	.....	32,686
Boots and shoes.....*pairs*	1,663	4,766	40,716	34,521
Clothing, including waterproofed	.....	38,058	.....	348,744
Gaskets	.....	3,439	.....	14,138
Gloves	.....	1,558	.....	9,753
Hot water bottles	.....	9,380	.....	25,805
Tires, bicycle .....*number*	146	170	19,129	9,389
Pneumatic .....*number*	1,549	24,632	12,818	170,232
Inner tubes .....*number*	229	703	1,483	4,981
Solid for automobiles and motor trucks ....*number*	68	1,625	508	15,533
Other solid tires	.....	1,860	.....	10,860
Mats and matting	.....	3,989	.....	52,115
Cement	.....	3,224	.....	35,463
Golf balls .....*dozen*	311	760	20,220	59,751
Heels .....*pairs*	98,857	3,810	876,022	39,369
Other rubber manufactures	.....	114,182	.....	823,705
Totals	.....	$257,414	.....	$1,956,754
Totals, rubber imports	.....	$1,287,612	.....	$11,221,627

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS

UNMANUFACTURED	Produce of Canada Value	Re-exports of Foreign Goods Value	Produce of Canada Value	Re-exports of Foreign Goods Value
Waste rubber	$26,411	.....	$160,860	.....
Totals	$26,411	.....	$160,860	.....
MANUFACTURED				
Belting	$47,455	.....	$355,978	.....
Canvas shoes with rubber soles	555,983	.....	3,171,130	.....
Boots and shoes	614,003	.....	1,932,515	.....
Clothing, including waterproofed	2,492	.....	16,922	.....
Hose	35,210	.....	142,274	.....
Tires, bicycle	362	.....	5,995	.....
Pneumatic	1,163,983	.....	8,240,891	.....
Inner tubes	144,501	.....	1,164,031	.....
Solid	12,746	.....	90,825	.....
Other rubber manufactures	247,830	$4,045	1,139,154	$97,806
Totals	$2,824,565	$4,045	$16,259,715	$97,806
Totals, rubber exports	$2,850,976	$4,045	$16,420,575	$97,806

Plantation Rubber Exports from Malaya*

	January 1 to December 31, 1929		
	From Singapore Tons	From Penang Tons	From Malacca Tons
To United Kingdom	16,100	15,196	11,549
British Possessions	5,009	1,086	410
Continent of Europe	28,108	5,122	7,500
United States	178,398	50,560	21,560
Japan	22,387	225	1,766
Other countries	873	99	10
Totals	250,875	72,288	42,795

*Excluding all foreign transhipments.

United States Crude and Waste Rubber Imports for 1930 by Months

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total 1930	Total 1929	Balata	Miscellaneous	Waste
January .....*tons*	46,042	362	747	76	10	125	...	47,362	52,305	127	748	35
February	42,510	275	788	66	14	75	...	43,728	64,538	130	543	144
Total, two months, 1930 .....*tons*	88,552	637	1,535	142	24	200	...	91,090	.....	257	1,291	179
Total, two months, 1929 .....*tons*	*115,053	....	1,585	90	102	...	13	.....	116,843	147	2,019	500

* Latex included.

Compiled from Rubber Manufacturers Association statistics.

United States Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	December, 1929		Twelve Months Ended December, 1929	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*Free*				
Crude rubber	96,211,423	$17,573,330	*1,262,938,846	*$240,966,780
Liquid latex	628,545	132,265	.....	.....
Jelutong or Pontianak	1,232,410	156,959	18,376,413	2,458,126
Balata	56,740	19,955	1,630,642	566,964
Gutta percha	114,038	12,005	1,000,580	167,479
Guayule	224,000	41,328	2,857,000	545,175
Siak, scrap and reclaimed	804,546	19,537	20,182,717	396,532
Totals	99,271,702	$17,955,379	1,306,986,198	$245,101,056
Chicle *dutiable*	2,070,260	$1,027,432	13,223,430	$6,621,461
MANUFACTURED—*Dutiable*				
Belting	79	$24	62,470	$33,975
Tires	1,170	36,830	5,540	100,367
Other rubber manufactures	.....	127,953	.....	2,185,495
Totals	1,249	$164,807	68,010	$2,319,837

EXPORTS OF FOREIGN MERCHANDISE

RUBBER AND MANUFACTURES				
Crude rubber	6,147,776	$1,007,279	81,726,383	$16,868,733
Balata	16,258	5,448	255,226	112,475
Gutta percha, rubber substitutes, and scrap	.....	.....	93,488	9,365
Rubber manufactures	.....	8,757	.....	621,608
Totals	6,164,034	$1,021,484	82,075,097	$17,612,181

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED				
Reclaimed	1,947,110	$135,067	27,707,161	$1,939,176
Scrap and old	4,402,301	174,261	56,307,522	2,515,396
Rubberized automobile cloth *sq. yd.*	90,171	46,438	1,971,331	1,010,851
Other rubberized piece goods and hospital sheeting *sq. yd.*	113,897	51,224	1,658,559	741,064
Footwear				
Boots *pairs*	117,587	232,396	1,520,729	3,163,122
Shoes *pairs*	273,758	362,594	3,398,113	3,735,700
Canvas shoes with rubber soles *pairs*	340,445	260,318	7,427,279	4,991,926
Soles *doz. pairs*	12,721	35,023	150,318	425,289
Heels *doz. pairs*	100,584	70,011	1,480,407	1,056,051
Water bottles and fountain syringes *number*	30,750	17,246	462,652	302,610
Gloves *doz. pairs*	10,001	25,877	122,138	318,091
Other druggists' sundries	.....	24,708	.....	407,130
Balloons *gross*	54,708	65,459	815,181	880,235
Toys and balls	.....	14,300	.....	194,446
Bathing caps *doz.*	4,274	11,271	182,035	389,316
Bands	35,182	18,053	483,043	255,480
Erasers	46,557	30,324	557,235	368,086
Hard rubber goods				
Electrical goods	121,877	17,280	1,977,953	260,598
Other goods	.....	27,787	.....	439,889
Tires				
Truck and bus casings, 6 inches and over *number*	23,392	602,890	287,052	7,555,490
Other automobile casings *number*	181,218	1,774,870	2,509,138	25,924,202
Tubes, auto *number*	134,608	229,528	1,899,274	3,409,611
Other casings and tubes *number*	5,713	17,600	199,729	590,753
Solid tires for automobiles and motor trucks *number*	3,140	73,760	44,759	1,301,432
Other solid tires	87,935	15,337	1,639,122	297,144
Tire accessories	.....	127,384	.....	1,686,648
Rubber and friction tape	241,889	56,074	1,795,470	510,773
Belting	417,194	216,043	5,670,159	3,056,236
Hose	813,144	281,940	9,384,300	3,129,768
Packing	179,554	85,240	2,592,769	1,183,031
Thread	126,858	131,429	1,698,623	1,721,081
Other rubber manufactures	.....	223,165	.....	3,202,770
Totals	.....	$5,454,897	.....	$76,963,395

* Liquid latex included.

Crude Rubber Imports by Customs Districts

	*January, 1929		*January, 1930	
	Pounds	Value	Pounds	Value
Massachusetts	4,488,269	$742,382	4,442,954	$735,551
New York	108,612,885	19,443,743	96,382,244	16,177,031
Philadelphia	290,768	50,469	1,644,097	254,596
Maryland	1,654,367	277,272	90,850	15,515
Los Angeles	8,008,839	1,371,028	3,868,212	656,442
San Francisco	160,165	32,388	181,922	30,093
Oregon	11,200	1,851	11,252	1,760
Ohio	5,498,234	915,833	514,684	89,895
Colorado	257,600	42,963	168,000	27,383
Totals	128,982,327	$22,877,929	107,304,215	$17,988,266

* Including latex, dry rubber content.

United Kingdom Statistics

IMPORTS

	January, 1929		January, 1930	
UNMANUFACTURED.	Pounds	Value	Pounds	Value
Crude Rubber				
From—				
Straits Settlements	20,528,200	£775,679	17,309,700	£565,904
Federated Malay States	8,305,900	319,268	6,626,200	218,688
British India	1,404,100	56,912	1,802,000	59,966
Ceylon and Dependencies	4,087,500	162,409	4,130,500	133,809
Java and Dutch Borneo	2,242,500	88,554	2,104,200	71,011
Sumatra and other Dutch possessions in Indian Seas	3,440,400	144,618	1,992,700	63,609
Other countries in East Indies and Pacific, not elsewhere specified	147,000	5,483	210,100	7,319
Brazil	1,210,800	49,001	909,000	31,122
South and Central America (except Brazil)	23,500	815	3,200	106
West Africa				
French West and Equatorial Africa	.....	.....	100	3
Gold Coast	35,100	1,368	38,100	1,254
Other parts of West Africa	309,000	11,594	203,800	7,773
East Africa, including Madagascar	133,800	5,573	70,200	2,205
Other countries	137,600	5,167	285,400	10,103
Totals	42,005,400	£1,626,441	35,685,200	£1,172,872
Gutta percha and balata	904,700	66,123	629,000	53,957
Waste and reclaimed rubber	900,600	9,543	796,600	10,995
Rubber substitutes	14,400	307	3,200	79
Totals	43,825,100	£1,702,414	37,114,000	£1,237,903
MANUFACTURED				
Tires and tubes				
Pneumatic				
Outer covers	.....	£53,739	.....	£18,885
Inner tubes	.....	7,478	.....	4,132
Solid tires	.....	6,303	.....	4,446
Boots and shoes *doz. pairs*	86,975	116,342	88,686	120,185
Other rubber manufactures	.....	171,857	.....	211,818
Totals	.....	£355,719	.....	£359,466

EXPORTS

UNMANUFACTURED				
Waste and reclaimed rubber	3,698,100	£23,836	2,130,600	£18,040
Rubber substitutes	37,500	822	40,700	872
Totals	3,735,600	£24,658	2,171,300	£18,912
MANUFACTURED				
Tires and tubes				
Pneumatic				
Outer covers	.....	£250,607	.....	£366,874
Inner tubes	.....	37,355	.....	51,971
Solid tires	.....	16,091	.....	7,666
Boots and shoes *doz. pairs*	19,775	36,854	24,026	35,654
Other rubber manufactures	.....	254,596	.....	218,852
Totals	.....	£595,503	.....	£681,017

EXPORTS—COLONIAL AND FOREIGN

UNMANUFACTURED				
Crude Rubber				
To—				
Russia	123,400	£4,687	2,236,300	£92,866
Sweden, Norway, and Denmark	351,700	14,972	203,700	8,420
Germany	3,756,000	139,970	3,025,300	105,359
Belgium	1,215,700	48,432	777,300	31,516
France	5,135,400	194,871	2,572,300	100,313
Spain	328,600	12,452	48,200	2,240
Italy	1,158,700	50,921	122,600	5,419
Other European countries	870,100	31,688	669,300	26,267
United States	2,138,000	81,920	1,023,000	33,487
Other countries	158,500	7,893	129,300	6,825
Totals	15,236,100	£587,806	10,807,300	£412,712
Gutta percha and balata	219,100	13,135	62,600	5,053
Waste and reclaimed rubber	50,600	563	1,200	26
Totals	15,505,800	£601,504	10,871,100	£417,791
MANUFACTURED				
Tires and tubes				
Outer covers	.....	£7,872	.....	£4,035
Inner tubes	.....	749	.....	471
Solid tires	.....	366	.....	60
Boots and shoes *doz. pairs*	941	2,440	833	2,743
Other rubber manufactures	.....	7,375	.....	7,214
Totals	.....	£18,802	.....	£14,523

London Stocks, January, 1930

	Landed for Jan.	Delivered for Jan.	Stocked January 31		
LONDON	Tons	Tons	1930 Tons	1929 Tons	1928 Tons
Plantation	12,299	6,163	60,320	25,069	66,378
Other grades	....	....	41	75	95
LIVERPOOL					
Plantation	†2,197	†1,297	†19,849	†3,775	†2,136
Total tons, London and Liverpool	14,496	7,460	80,210	28,919	68,609

† Official returns from the recognized public warehouses.

United States Statistics of Rubber Imports, Consumption, and Stocks

THE price graph represents official closing prices of the Rubber Trade Association of New York for spot ribbed smoked sheet rubber.

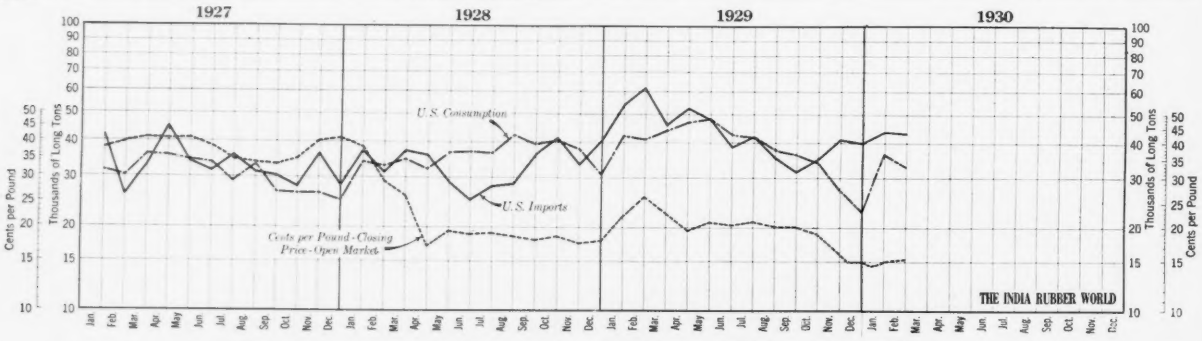
Net imports for February, 1930, were 43,653 tons, a decrease of 1,106 tons from January imports. February consumption was 32,726 tons, a decrease of 3,943 tons from January. Estimated March imports 40,000 tons, consumption 35,000 tons, stocks afloat 65,000 tons, and U. S. stocks on hand 137,000 tons.

London stocks between January 25 and March 22 showed a steady increase. The weekly record is: February 1, 60,460 tons; February 8, 61,482; February 15, 62,659; February 22, 62,725; March 1, 64,383; March 8, 66,418; March 15, 66,885; March 22, 68,404 tons.

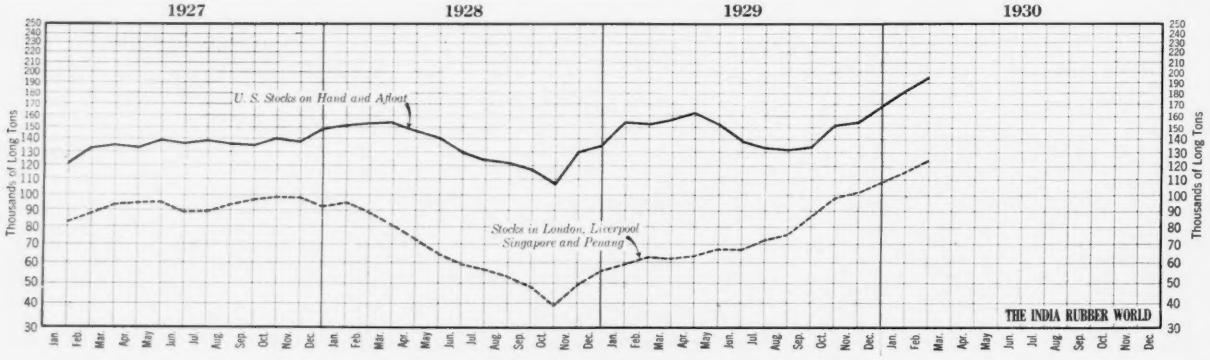
The weekly record of Liverpool stocks is: February 1, 19,898 tons; February 8, 19,761; February 15, 19,677; February 22, 19,704; March 1, 20,693; March 8, 20,727; March 15, 20,849; March 22, 21,187 tons.

Twelve Months	*Net Imports Tons	Consumption Tons	Stocks on Hand Tons	Stocks Afloat Tons	Total Domestic Stocks Tons	British and Malayan Stocks: London & Liverpool Tons	British and Malayan Stocks: Singapore & Penang Tons	British and Malayan Stocks: Total Tons
1925	385,596	388,000	50,985	52,421	103,406	6,328	18,840	25,168
1926	399,972	366,000	72,510	51,238	123,748	51,320	26,443	77,763
1927	403,472	373,000	100,130	47,938	148,068	66,261	25,798	92,059
1928	407,572	437,000	66,166	68,764	134,930	22,603	32,905	55,508
1929	527,327	464,644	105,138	62,389	167,527	73,253	35,548	108,801
1928								
January	37,552	34,065	110,244	41,256	151,500	68,660	25,868	94,528
February	31,415	33,370	108,955	43,316	152,271	65,307	22,867	88,174
March	37,468	35,335	114,061	39,324	153,385	60,405	20,538	80,943
April	36,175	32,450	113,083	33,986	147,069	55,910	16,946	72,856
May	29,112	36,965	105,356	34,374	139,730	46,882	17,687	64,569
June	25,567	37,305	90,198	40,001	130,119	41,091	18,207	59,298
July	28,362	37,040	83,242	42,304	125,546	37,818	18,663	56,481
August	28,827	42,505	68,994	51,875	120,869	34,364	18,971	53,335
September	36,800	39,490	68,851	48,566	117,417	33,673	14,898	48,571
October	41,667	40,455	66,421	41,571	107,992	26,600	12,149	38,749
November	33,846	37,095	61,956	68,119	130,075	19,988	29,188	49,176
December	40,781	30,925	66,166	68,764	134,930	22,603	32,905	55,508
1929								
January	53,992	42,530	76,342	78,596	154,938	28,966	29,617	58,583
February	61,331	41,137	90,058	63,825	153,883	29,659	32,373	62,032
March	46,391	44,238	100,536	56,476	157,012	32,540	29,437	61,977
April	52,520	47,000	107,659	55,409	163,068	35,958	27,339	63,297
May	48,475	48,692	97,192	55,404	152,596	35,828	31,932	67,760
June	38,821	42,753	92,061	46,035	138,096	35,575	31,861	67,436
July	41,114	41,069	92,535	38,858	131,393	35,599	35,473	71,072
August	35,397	37,854	90,769	41,618	132,387	43,165	33,124	76,289
September	32,912	34,325	84,362	49,480	133,842	52,214	34,291	86,505
October	36,040	34,418	88,483	62,294	150,777	61,706	34,947	96,653
November	41,097	27,355	92,219	62,358	154,577	70,109	30,913	101,922
December	40,588	23,273	105,138	62,389	167,527	73,253	35,548	108,801
1930								
January	44,759	36,669	120,649	61,863	182,512	81,300	33,468	114,768
February	43,653	32,726	131,748	63,404	195,152	87,100	37,550	124,650

*Including liquid latex, but not guayule.



United States Imports, Consumption, and Prices of Ribbed Smoked Sheets



United States, British and Malayan Rubber Stocks